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Geol Survey

Federal Energy Regulatory Commission

Office of Pipeline Regulation

February 1997

ANR Pipeline Company

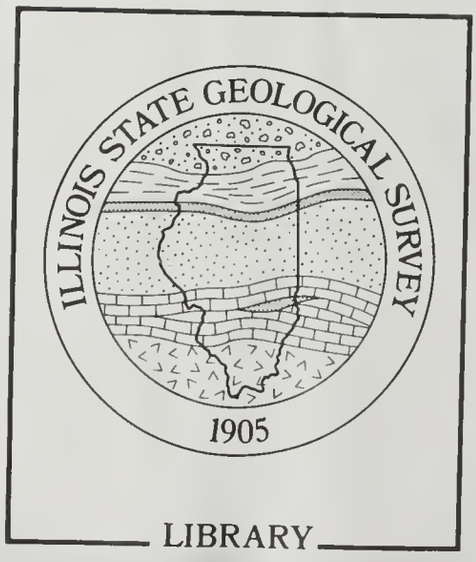
Docket No. CP96-641-000

MICHIGAN LEG SOUTH LOOPING PROJECT

APR 11 1997
IL GEOL SURVEY

Environmental Assessment

Washington, DC 20426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FEDERAL ENERGY REGULATORY COMMISSION

WASHINGTON, D. C. 20426

In Reply Refer To:
OPR/DEER/ERC I
ANR Pipeline Company
Docket No. CP96-641-000

TO THE PARTY ADDRESSED:

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared this environmental assessment (EA) on the natural gas pipeline facilities proposed by ANR Pipeline Company (ANR) in the above-referenced docket.

The EA was prepared to satisfy the requirements of the National Environmental Policy Act. The staff concludes that approval of the proposed project, with appropriate mitigating measures, would not constitute a major Federal action significantly affecting the quality of the human environment.

ANR proposes to loop its existing Michigan Leg South System with 11.9 miles of 42-inch-diameter pipeline in two segments to provide additional system flexibility and to alleviate a bottleneck in the pipeline system. The two segments consist of 1.6 miles of loop in Will County, Illinois, and 10.3 miles of loop in Porter County, Indiana. The project also includes the addition of one aftercooling bay at the existing St. John Compressor Station in Lake County, Indiana, and the relocation of an existing pig launcher from milepost (MP) 885.02 to MP 874.72 in Porter County, Indiana, and a pig receiver from MP 848.31 to MP 849.91 in Will County, Illinois.

The EA has been placed in the public files of the FERC and is available for public inspection at:

Federal Energy Regulatory Commission
Public Reference and Files Maintenance Branch
888 First Street, N.E., Rm. 2A-1
Washington, DC 20426
(202) 208-1371

Copies of the EA have been mailed to Federal, state and local agencies, public interest groups, interested individuals, newspapers, and parties to this proceeding. A limited number of copies of the EA are available from the above address.

Any person wishing to comment on the EA may do so. Written comments must be received by **March 10, 1997**, reference Docket No. CP96-641-000, and be addressed to:

Office of the Secretary
Federal Energy Regulatory Commission
888 First Street, N.E., Rm. 1A
Washington, DC 20426

Comments will be considered by the Commission but will not serve to make the commentor a party to the proceeding. Any person seeking to become a party to the proceeding must file a motion to intervene pursuant to Rule 214 of the Commission's Rules of Practice and Procedures (18 CFR 385.214).

The date for filing timely motions to intervene in this proceeding has passed. Therefore, parties now seeking to file late interventions must show good cause, as required by section 385.214(b)(3), why this time limitation should be waived. Environmental issues have been viewed as good cause for late intervention. **You do not need intervenor status to have your comments considered.**

Lois D. Cashell
Secretary

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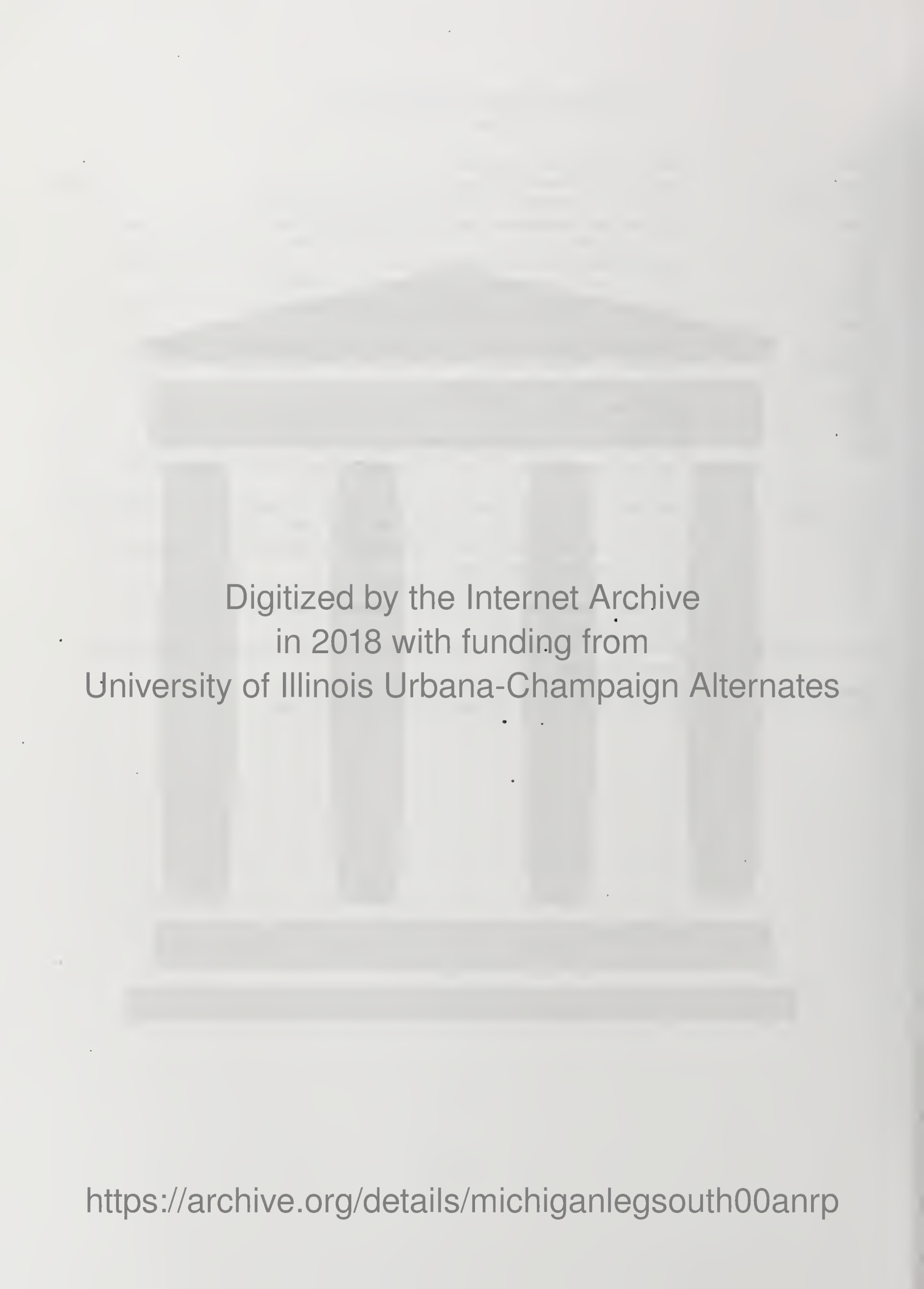
ABBREVIATIONS AND ACRONYMS

ANR	ANR Pipeline Company
CFR	Code of Federal Regulations
Commission	Federal Energy Regulatory Commission
dBA	decibels measured on the A-weighted scale
DOT	U.S. Department of Transportation
EA	environmental assessment
EPA	U.S. Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
FWS	U.S. Fish and Wildlife Service
ILDNR	Illinois Department of Natural Resources
INDNR	Indiana Department of Natural Resources
L_{dn}	day-night sound level
MMcf	million cubic feet
MP	milepost
NOI	Notice of Intent to Prepare an Environmental Assessment for the Michigan Leg South Looping Project
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSA	noise sensitive area
OPR	Office of Pipeline Regulation
Plan	Upland Erosion Control, Revegetation, and Maintenance Plan
Procedures	Wetland and Waterbody Construction and Mitigation Procedures
Secretary	Secretary of the Commission
SHPO	State Historic Preservation Officer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https://archive.org/details/michiganlegsouth00anrp

A. PROPOSED ACTION

1. Purpose and Need

On July 15, 1996, ANR Pipeline Company (ANR) filed an application for approval to construct and operate additional natural gas pipeline facilities in northeastern Illinois and northwestern Indiana.[1/]

This project would provide additional flexibility to enable shippers on ANR's system to transport volumes currently bottlenecked at Sandwich, Illinois, to secondary delivery points at locations east of Bridgman, Michigan. ANR has curtailed service during the peak summer periods because of capacity constraints. During the summers of 1994, 1995, and 1996 full capacity was attained for 20, 14, and 12 days, respectively. ANR also had to deny firm secondary service scheduling for most of the summer. The portion of ANR's Michigan Leg South System that would be looped includes a 22-inch-diameter mainline and a 30-inch-diameter loop.

The project involves construction and operation of two segments:

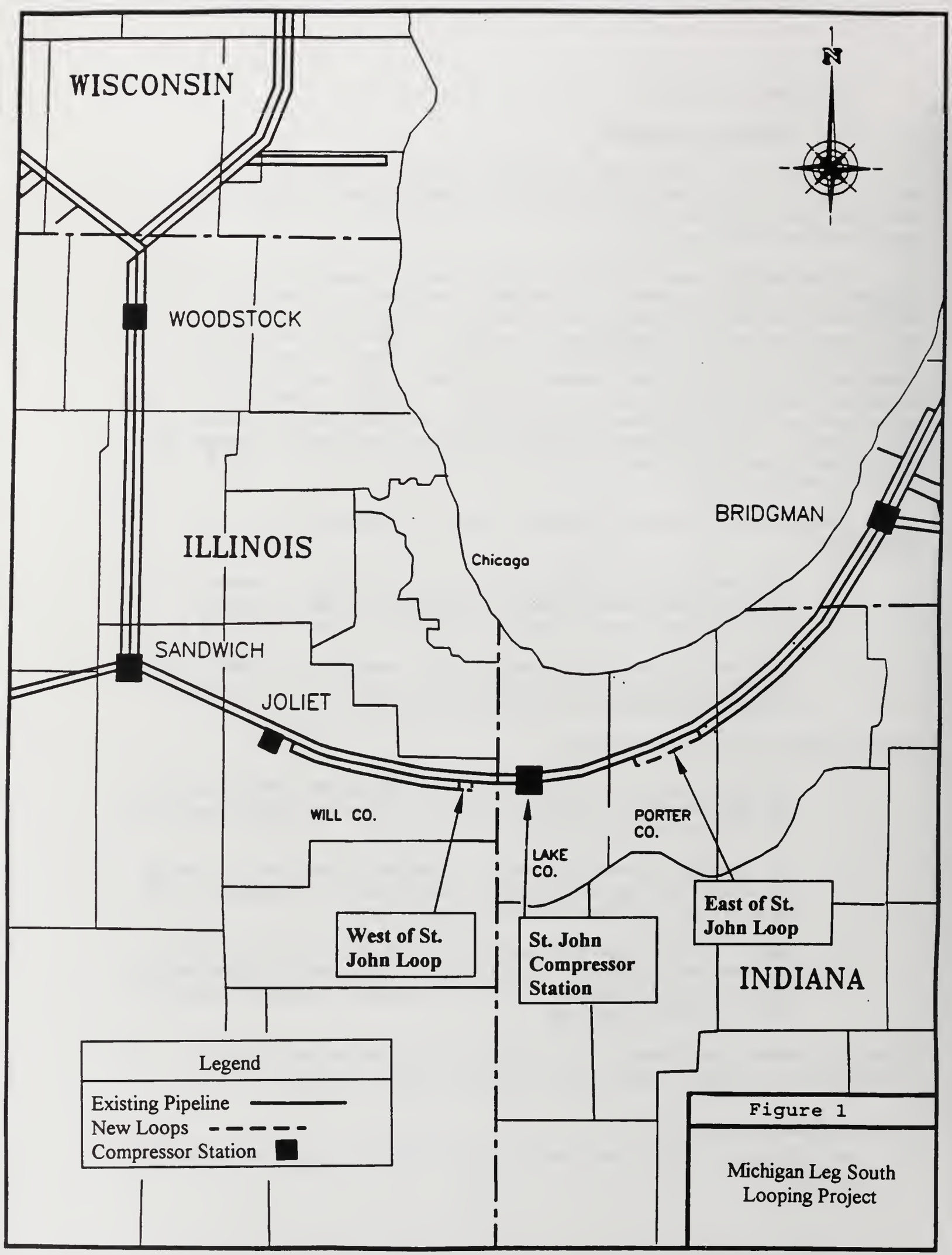
- the West of St. John Loop would consist of about 1.6 miles of 42-inch-diameter pipeline in Will County, Illinois between milepost (MP) 848.31 and MP 849.91.
- the East of St. John Loop would consist of about 10.3 miles of 42-inch-diameter pipeline in Porter County, Indiana between MP 874.72 and MP 885.02.

Associated facilities include:

- The pig launcher currently located at MP 885.02 would be relocated to the beginning of the new pipeline at MP 874.72 on the East of St. John Loop.
- The pig receiver currently located at MP 848.31 would be moved to the end of the new pipeline segment at MP 849.91 on the West of St. John Loop.
- One aftercooling bay would be added at the St. John Compressor Station to maintain a discharge temperature at the station below 115°F to prevent thermal damage to the pipeline coating.

Figure 1 shows the general location of the loops and the St. John Compressor Station. More detailed maps are in Appendix A.

1/ As supplemented on September 10, October 1, and November 5, 1996.


WISCONSIN
N
WOODSTOCK
BRIDGMAN
ILLINOIS
Chicago
SANDWICH
JOLIET
WILL CO.
PORTER CO.
LAKE CO.
West of St. John Loop
St. John Compressor Station
East of St. John Loop
INDIANA
Legend
Existing Pipeline
New Loops
Compressor Station
Figure 1
Michigan Leg South Looping Project

We[2/] prepared this environmental assessment (EA) to analyze environmental impacts of the construction and operation of facilities proposed by ANR in its Michigan Leg South Looping Project. This EA would be used by the Federal Energy Regulatory Commission (FERC or Commission) in its decision-making process. On July 30, 1996, the FERC issued a Notice of Intent to Prepare an Environmental Assessment for the Proposed Michigan Leg South Looping Project and Request for Comments on Environmental Issues (NOI). Written comments were requested from the public on specific concerns about the project or issues that should be considered during the preparation of the EA.

Seven comment letters were received in response to the NOI, including five from landowners, one from an engineering firm designing a housing/commercial development that the pipeline crosses and a list of threatened and endangered species that may be affected by the loops from the U.S. Fish and Wildlife Service. On the basis of the public comments received and our own analysis, the following areas and concerns are addressed in the EA:

- Soils - Potential damage to farmland soils and tile drainage systems.
- Biological Resources - Effect of construction on wildlife habitat, including threatened and endangered species.
- Water Resources - Effect of crossing streams and effects on wells.
- Land Use - Potential development restrictions of the additional right-of-way needed for the loops and effects on existing landscaping and trees.
- Public Safety - Consequences of a pipeline rupture and explosion.

2. Proposed Facilities

ANR's Michigan Leg South Looping Project consists of two loops, one of 1.6 miles and another of 10.3 miles of 42-inch-diameter pipeline. An aftercooling bay would be added to the St. John Compressor Station.

The facilities are being installed to alleviate mainline capacity constraints that exist on the Michigan Leg South facilities, which experiences 100 percent utilization during

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2/ "We", "us", and "our" refer to the environmental staff of the Office of Pipeline Regulation (OPR).

certain times of the year. As a result of the de-bottlenecking, ANR's shippers would be able to make year-round use of their entitlements. It would also result in other system-wide benefits such as enhanced protection against facilities outages, both during the summer and critical winter periods. ANR experiences high summer time throughput in this area of its system at a time when significant volumes are generally moving in an easterly direction from supply areas for storage injection purposes, and to serve summer loads in ANR's traditional market areas and the northeastern United States. This results in a limitation in the amount of capacity available in this area at a time when the demand for low cost Southwest, Rocky Mountain and Canadian gas supplies is at a peak. The incremental looping would relieve the bottleneck on ANR's Michigan Leg South and increase its capacity by 135 million cubic feet (MMcf) per day.

The West of St. John Loop would be constructed adjacent and 35 feet south of the existing 30-inch-diameter loop (the mainline is 25 feet north of the 30-inch loop). The East of St. John Loop would be constructed 35 feet south of the existing mainline (the existing loop is north of the mainline).

In two areas the East of St. John Loop has been rerouted away from the existing pipelines. The first reroute is near MP 876 where the loop was moved to the south to avoid a recently constructed sewage treatment plant and a day care center. Housing developments to the north preclude rerouting to the north. The second reroute occurs between MP 880.2 and 881.3 to facilitate road bores at a major highway interchange and avoid two residences near the existing pipelines. The new route would avoid existing residences by passing through agricultural fields, abandoned fields, and a proposed housing/commercial development.

ANR estimates that the construction costs would be $19.1 million for the facilities.

3. Construction, Operation, and Maintenance Procedures

ANR proposes to complete construction of its facilities so that they can be in-service by June 1997.

The pipeline would be installed using conventional pipeline construction methods. The loops would be offset 35 feet from ANR's existing pipelines except for two areas. Stream, ditch, and wetland crossings would be installed using wet-trench construction unless otherwise specified; railroad and paved road crossings would be bored. ANR would use our *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan) (see appendix B), and our *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures) (see appendix C) to minimize impacts and speed stabilization/revegetation of disturbed areas with the exception that ANR has requested an 85-foot-wide construction

right-of-way, including wetlands, to safely construct the 42-inch-diameter loops. Construction, operation, and maintenance activities would also comply with the U.S. Department of Transportation (DOT) Code of Federal Regulations, Title 49, Part 192 (49 CFR 192), "Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards", and other applicable regulations.

Prior to construction, ANR would identify the location of underground utility lines. Roads and railroads would usually be bored, and utility rights-of-way would be crossed by open cutting or boring. Where required, a pipe casing or sleeve would be inserted over the pipeline. Extra workspace would be needed to accommodate boring equipment in areas where boring is done.

Two county roads would be crossed by the West of St. John Loop. The East of St. John Loop would cross 17 county roads, one state highway, one U.S. highway, one toll road, and two sets of railroad tracks. ANR would obtain the appropriate permits for road crossings from the DOT, state highway departments, and county highway departments.

ANR would avoid restricting normal traffic flow at road, highway, and bridge crossings. At such crossings, all appropriate safety procedures would be implemented to prevent injuries to workers and the public. Traffic controls, night flashers, and markers would be used to identify construction areas to the public.

4. Land Requirements

The width of the combined permanent rights-of-way for the two existing pipelines is 75 feet. The new loops would be 35 feet south of the nearest existing pipeline as shown in the rights-of-way cross sections in figure 2. An additional 35 feet of permanent right-of-way would be acquired, 10 feet would be needed on the north side of the 42-inch-diameter loop and 25 feet would be on the south side of the loop for safe operation and maintenance of the pipeline. The new total permanent right-of-way for the three pipelines would be 110 feet. The newly acquired right-of-way would be 50-feet-wide centered over the loop where the new loop deviates from the existing pipelines.

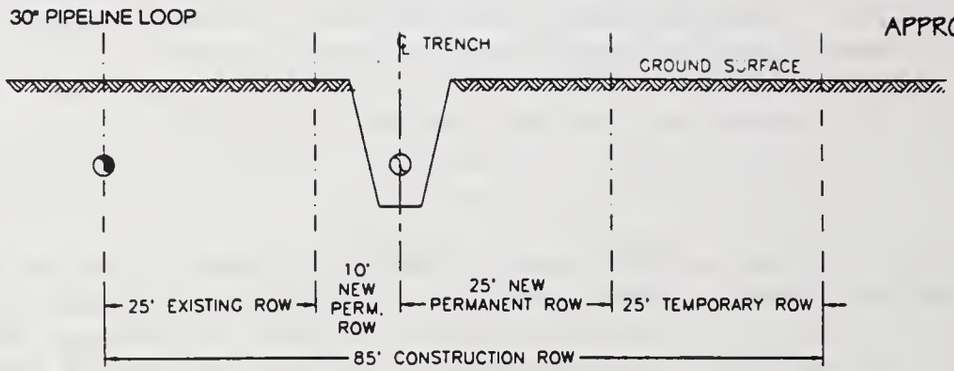
Construction of the loop would use an 85-foot-wide construction right-of-way consisting (from north to south) of 25 feet of existing permanent right-of-way, 10 feet of permanent right-of-way required on the north side of the proposed 42-inch-diameter loop, 25 feet of permanent right-of-way on the south side of the proposed loop, and 25 feet of temporary work space.

Extra workspace would be required for construction at most railroad, waterbody, and wetland crossings and other areas

WEST OF ST. JOHN

CROSS-SECTION A

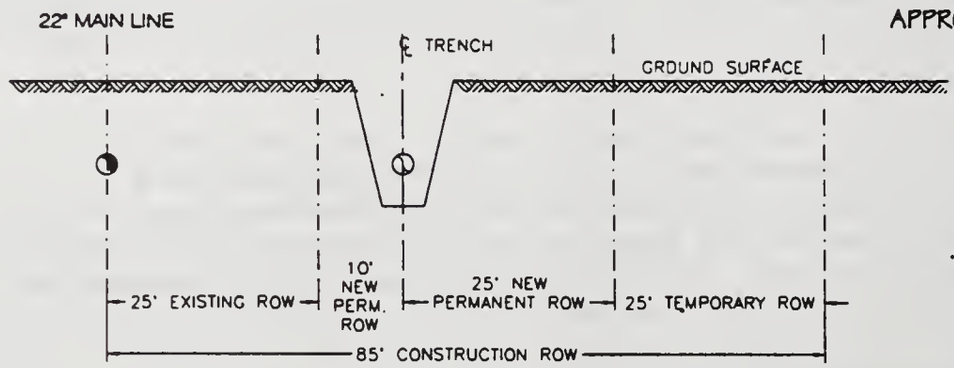
APPROXIMATE MILEPOSTS:
848.30 to 849.91



EAST OF ST. JOHN

CROSS-SECTION B

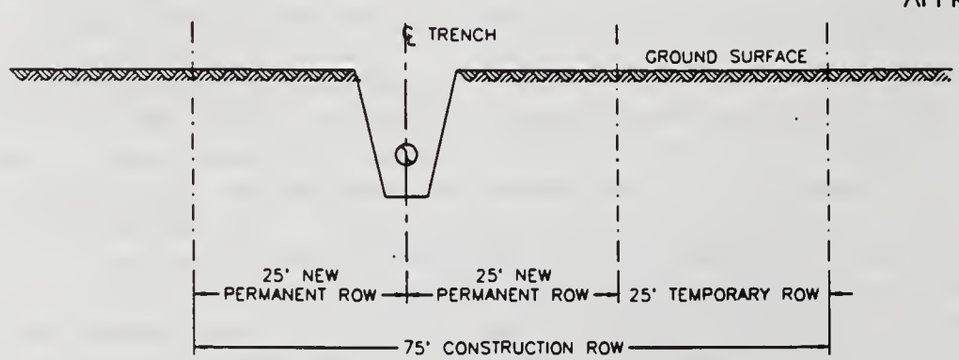
APPROXIMATE MILEPOSTS:
874.72-875.50
876.00-880.20
881.30-885.02



EAST OF ST. JOHN

CROSS-SECTION C

APPROXIMATE MILEPOSTS:
875.50-876.00
880.20-881.30



LEGEND:

⊘ = PROPOSED PIPELINE

◑ = EXISTING PIPELINE

ROW = RIGHT-OF-WAY

0 12.5 25 50

SCALE IN FEET

ANR PIPELINE COMPANY

FIGURE 2
TYPICAL RIGHT-OF-WAY
CROSS-SECTION FOR PIPELINES

DWG NO.: 13704-067 ANR-005 | DAMES & MOORE

including areas where topsoil segregation, deeper depth of cover, and sidehill cuts are necessary. The extra work spaces required typically would be 50 feet wide and 100 feet long located south of the 25-foot temporary workspace right-of-way. ANR expects to need 16 extra workspaces on the West of St. John Loop totaling 1.84 acres, and 43 extra workspaces on the East of St. John Loop totaling 9.89 acres.

Contractor yards would be required for contractor parking, temporary field offices, and field assembly. Two contractor yards would be used for this project. The first would be at the west end of the West of St. John Loop at MP 843.3 on property owned by ANR. The second contractor yard would be located near MP 878 of the East of St. John Loop on about 5.7 acres. Pipeyards would not be required for this project since pipe marshaling and storage would take place at the nearby Midwest Pipe Coating Company facility in Schererville, Indiana.

ANR would use existing public roads to access the pipeline, except for one existing private gravel road near MP 884.6.

The relocation of the existing pig receiver at MP 848.31 to the west end of the West of St. John Loop at MP 849.91 would require about 0.17 acre of additional land to be acquired for permanent use and about 0.10 acre for temporary workspace. The relocation of the existing pig launcher at MP 885.02 to the beginning of the East of St. John Loop at MP 874.72 would also require about 0.17 acre for permanent use and 0.10 acre as a temporary work area.

ANR would add one additional aftercooling bay would be placed alongside existing aftercooling bays within the St. John Compressor Station. Two acres of previously disturbed extra workspace would be used within the station. No impacts outside the station would occur.

Construction of the West of St. John Loop would disturb 16.49 acres temporarily and 6.79 acres permanently. Construction of the East of St. John Loop would disturb 104.28 acres temporarily and 46.49 acres permanently.

B. ENVIRONMENTAL ANALYSIS

1. Geology and Soils

The East of St. John Loop is within the Valparaiso Morainal Area physiographic subdivision. This area has elevations ranging from 620 to 710 feet above sea level. Unconsolidated sediments 150 to 200 feet thick cover shale bedrock.

The West of St. John Loop is within the Wheaton/Valparaiso Morainal physiographic subdivision, which is defined by an arc-

shaped complex of end moraines that roughly parallel the shores of Lake Michigan. The project area has about 35 feet of topographic relief, with elevations ranging 700 to 735 feet above sea level. Unconsolidated sediments 100 to 150 feet in depth covers dolomitic bedrock.

Blasting should not be necessary to construct the loops. No mineral resources would be impacted. The project areas have a low seismic potential as determined by the Building Seismic Safety Council, although earthquakes ranging from I to IV on the Modified Mercalli Intensity Scale have been recorded in the project area. Gas pipelines made of welded steel have good inherent ductility and the wall thickness is expected to tolerate the stresses caused by earthquake ground shaking without rupturing. No geologic hazards are expected to affect the facilities.

The soils in the project area are rich and fertile and include some of the most productive soils in the nation. ANR would use our Plan to minimize impacts to soils and quickly revegetate all areas disturbed by construction. In residential areas and active cropland, topsoil would be stripped and restored to ensure productivity and quick revegetation of these areas.

The pig launcher and receiver would be located on soils classified by the Natural Resource Conservation Service (NRCS) as prime farmland (if drained). Both sites are not actively farmed at the present time and it is unlikely that these areas are drained. No wetlands are present at these sites. The total of both sites that would be permanently used for the pig receiver and pig launcher is 0.34 acre. The aftercooling bays would be installed within a previously disturbed area within the St. John Compressor Station.

A review of USDA Soil Surveys for Will and Porter Counties and consultation with the NRCS indicates that soils in the project area are not prone to severe erosion, compaction, shallow bedrock, or poor vegetation. Some of the agricultural fields that are crossed have drainage tiles that would be damaged by construction. These would be repaired according to our Plan to the same or better condition than existed prior to construction. The project is not expected to adversely affect soils or soil productivity.

2. Vegetation

Most of the land crossed by the facilities has been cleared for agricultural use. Other vegetation types found in the vicinity of the project include forested woodlots, open land including pastures, mowed grassy landscaped areas between residences, abandoned fields, and wetlands. (Wetlands will be discussed in further detail in the Water Resources Section.) To

minimize environmental impacts, the loops would be constructed adjacent to the existing pipeline facilities for most of the area of new construction. Table 3 in the Land Use section contains the acreage of each type of land use including vegetation type affected temporarily and permanently by the loops.

Construction of the loops would disturb about 52 acres of agricultural land. After construction agricultural use of the land would be allowed to continue. A total of about 38.6 acres of open land, mostly abandoned agricultural land, would be disturbed. The vegetation consists of grasses, herbaceous plants, shrubs and small trees. After construction this would be allowed to return to its previous condition with the exception that the right-of-way would be mowed every 3 to 5 years according to our Plan which would limit the growth of trees and shrubs over the loop. A total of 12.6 acres of forested land would be cleared for construction of both loops. About 0.14 acre of this is on the West of St. John Loop and 12.50 acres is on the East of St. John Loop. About 0.08 and 7.59 acres would be permanently cleared of trees and shrubs. About 4.97 acres would be allowed to reforest naturally. In residential areas, mature trees and landscaping would not be removed from the edge of the construction work area unless necessary for the safe operation of construction equipment. Landscaping and lawns would be restored.

The addition of an aftercooling bay to the St. John Compressor Station would be constructed within the existing facility in a graveled area. No vegetation would be impacted.

The pig launcher would be constructed in an agricultural field at the beginning of the East of St. John Loop. The pig receiver would be constructed in an open area where current vegetation includes grasses and low woody growth. About 0.34 acre would be permanently cleared, fenced, and graveled for these facilities.

Use of the Plan would protect agricultural resources and would ensure quick revegetation of the right-of-way after disturbance.

3. Water Resources, Fisheries, and Wetlands

Will County, Illinois (West of St. John Loop) is wholly dependent on groundwater for commercial and drinking water. Residents of the Lake Michigan basin of northwestern Indiana receive their drinking water from Lake Michigan; most residents elsewhere in Indiana rely on groundwater as the predominant source of drinking water (Fenelon et al., 1994).

The aquifers common in Will County, Illinois are partially-confined sand and gravel aquifers ranging from several feet to greater than 100 feet thick. Recharge occurs through the

overlying till. Also carbonate rock aquifers ranging in thickness from 500 to 600 feet are present.

The aquifers types in the vicinity of the East of St. John Loop includes sand and gravel aquifers and carbonate rock aquifers. A surficial sand and gravel aquifer ranges in depth from 0 to 70 feet with an average thickness of 30 feet (Fenelon et al., 1994). Wells in this aquifer are not commonly used for public water supply. The buried sand and gravel aquifer ranges in thickness from 10 to 200 feet. The carbonate bedrock aquifer in the East of St. John Loop area generally consists of dolomite and limestone. Commonly 400 to 800 feet thick, the upper portion of the bedrock is highly permeable. Depth to bedrock ranges from 100 to 500 feet below land surface. The bedrock aquifer in this area is not used as a source of water because of high well operating costs and low water yields.

State well records were reviewed to identify wells within 150 feet of areas to be disturbed by the proposed project, and additional wells within 600 feet were also identified. According to the Illinois State Water Survey report, two wells are within 400 feet of areas disturbed by construction of the West of St. John Loop. According to the records search at the Indiana Department of Natural Resources (INDNR), Division of Water, 21 wells are within 600 feet of areas disturbed by construction of the East of St. John Loop. One well is within 150 feet of the aftercooling bay at the St. John Compressor Station. One well is within 400 feet of the pig receiver location, and no wells were found within 150 feet of the pig launcher.

To protect wells ANR would not refuel vehicles within a 200-foot radius of a private water well or within a 400-foot radius of a municipal or community water supply well. Potentially hazardous materials would not be stored within a 200-foot radius of a private well and a 400-foot radius of municipal or community water supply wells. ANR would report spills of hazardous materials to the appropriate Federal, state, and local agencies. ANR has developed a Spill Prevention, Containment and Control Plan that ANR would follow during construction to prevent spills. This plan contains procedures for reporting and cleaning up spills if they occur. Workers would be trained to handle fuels and other regulated substances and to quickly contain and clean-up spills. Absorbent materials would also be stored on site and would be readily accessible to contain and clean-up spills.

All of the streams crossed by the East of St. John Loop are part of the East Arm of the Little Calumet River. Sand Creek, Coffee Creek, Damon Run, and other unnamed tributaries are considered warmwater fisheries (Francis, 1996). The INDNR does not stock these tributaries. Salt Creek, another tributary of the Arm of the Little Calumet River, is considered a salmonid/coldwater fishery (Francis, 1996). Coho salmon, chinook

salmon, and steelhead trout are stocked in Salt Creek. Fishery designations are listed in table 1. No perennial streams are crossed by the West of St. John Loop.

The main impact to the fishery resources in the streams and rivers traversed by the proposed loops would be sedimentation due to construction activities, and the resulting erosion into the surface waters. Special mitigation procedures and construction techniques used at stream and river crossings should reduce the erosional impacts to nonsignificant levels.

To minimize and mitigate potential impacts to surface waters, ANR would use our Procedures. However, it would require a wider construction right-of-way (85 feet) to safely construct the 42-inch-diameter pipeline. Dry crossing or other appropriate methods would be used as practicable, or as described by the Procedures to reduce sediment loads in streams designated as coldwater fisheries. Stream banks would be stabilized with appropriate temporary erosion controls according to the Procedures during and after construction, and disturbed areas would be revegetated as quickly as possible after final cleanup of the area. Measures to be incorporated into ANR's stream crossing plans include inspections by a qualified individual to ensure that all stream crossing procedures are carried out in a safe and effective manner; no refueling or storage of fuels, or other hazardous materials within 100 feet of a wetland or waterbody; and use of sediment controls, such as silt fence or haybales, on both banks of streams and wetlands.

ANR would also follow applicable permits' regulatory guidelines recommended by Indiana to mitigate impacts to fisheries of special concern. The ILDNR indicated in a letter dated December 12, 1996, that a permit is not needed for stream crossings since no streams are crossed in Illinois. Initial consultation with the INDNR, Division of Fish and Wildlife (Francis, 1996) indicate construction guidelines for construction projects in salmonid and trout fisheries may include:

- streams would be closed to construction during spawning seasons (fall and spring);
- stream banks would be stabilized and restored after construction; and
- appropriate methods would be used to minimize siltation of streams during construction.

ANR has applied for an Indiana Floodway Permit on September 18, 1996, which covers the National Pollutant Discharge Elimination System Permit (NPDES), and state stream and wetland crossing permits. These permits are pending.

TABLE 1

WATERBODIES CROSSED BY THE EAST OF ST. JOHN LOOP

Milepost	Waterbody	Type[1]	Crossing Width[2]	State Water[3]	Fishery Type
874.9	Unnamed tributary of Salt Creek	I	>5	A,B,C	Warmwater
875.6	Unnamed tributary to Salt Creek	P	2	A,B,C	Warmwater
875.8	Salt Creek	P	25	A,B,C	Salmonid/Coldwater
876.0	Salt Creek	P	25	A,B,C	Salmonid/Coldwater
876.1	Salt Creek	P	26	A,B,C	Salmonid/Coldwater
876.4	Unnamed tributary to Salt Creek	I	>5	A,B,C	Warmwater
876.7	Unnamed tributary to Salt Creek	P	15	A,B,C	Warmwater
878.6	Damon Run	P	34	A,B,C	Warmwater
881.5	Coffee Creek	P	25	A,B,C	Warmwater
883.0	Sand Creek	P	12	A,B,C	Warmwater
883.6	Unnamed tributary to Sand Creek	I	6	A,B,C	Warmwater
884.5	Unnamed tributary to Little Calumet River	P	12	A,B,C	Warmwater

1 I = Intermittent; P = Perennial.

2 The information has been obtained from field observation; aerial photo interpretation; 1992 ANR 30" pipeline loop plan.

3 A - Full-body contact recreation (Indiana).
B - Capable of supporting a warmwater aquatic community and where natural temperatures permit, will be capable of supporting put-and-take trout fishing (Indiana).
C - Agricultural use (Indiana).

Water intake and discharge for hydrostatic testing would be done in accordance with applicable state water regulations and Federal and state discharge regulations. Test water would only be obtained from approved sources. ANR has indicated that all the streams listed in the table 1 are potential sources. The water intake would be screened to prevent entrainment of fish. ANR anticipates testing both loops in one test. ANR has applied for NPDES Permits for hydrostatic discharge from Illinois and Indiana on December 12, 1996, and September 18, 1996, respectively. Both permits are pending. ANR is in the process of identifying hydrostatic test water discharge sites.

The project is outside of the area requiring a Coastal Zone Use Permit in Indiana. The State of Illinois does not participate in the Coastal Zone Program.

Wetlands crossed by the loops were identified by U.S. Fish and Wildlife Service (FWS) and NRCS maps and by field delineations. About 9500 feet of wetlands would be crossed by the proposed loops consisting of 6 wetlands on the West of St. John Loop and 28 wetlands on the East of St. John Loop. Portions of these wetlands have been previously disturbed during past pipeline construction projects and during pipeline maintenance. Additional adjacent wetlands would be disturbed during construction of the loops, but most of the new wetland disturbance would be allowed to revegetate to its original condition. In a letter dated January 10, 1997, the FWS recommends that the U.S. Army Corps of Engineers require an individual Section 404 Permit for crossing wetlands and require 1:1 mitigation for the lost forested wetlands rather than utilize Nationwide Permit 12. ANR has applied with the U.S. Army Corps of Engineers for a wetland crossing permit on September 4, 1996; the permit is pending. See table 2 for a summary of wetland types and acreage disturbed by construction and appendix D for a listing of each wetland crossed.

Most of the new wetland disturbance is to forested wetlands (6100 feet). These consist of lowland hardwood forests are along streams and in depressions. The adjacent wetlands on ANR's existing rights-of-way are maintained as emergent wetlands consisting mostly of herbaceous annuals and perennial wetland plants.

About 2355 feet of emergent wetlands would be crossed by the loops. Also 945 feet of scrub/shrub wetlands would be crossed. Soils in these wetlands are temporarily to seasonally saturated with standing water present for brief to moderate periods. A small amount of the wetlands identified are in cultivated fields.

No wetlands would be impacted by the addition of the aftercooling bay at the compressor station or by the relocation of the pig launcher and receiver.

TABLE 2

WETLANDS AFFECTED BY CONSTRUCTION AND OPERATION

Facility	Wetland Type	Length of Each Type Crossed (feet)	Area Affected By (acres)	
			Construction	Maintenance
West of St. John Loop	Emergent	300	0.59	0.24
	Farmed	100	0.20	0.08
	Forested	200	0.39	0.14
	Open Water*	770	1.50	0.62
Subtotal		**1,370**	**2.68**	**1.08**
East of St. John Loop	Emergent	2,055	6.27	0.25
	Scrub/Shrub	175	0.34	0.14
	Forested	5,850	9.18	5.33
	Open Water**	50	0.10	0.04
Subtotal		**8,130**	**15.89**	**5.76**
Total		**9,500**	**18.57**	**6.84**

* 770 feet of this category is also classified as a scrub/shrub wetland.
** 50 feet of this category is also classified as a forested wetland.

Based on information from the wetlands surveys, a total of about 18.57 acres of wetlands would be temporarily impacted by construction of the proposed loops. Disturbed emergent and scrub/shrub wetlands would be restored in temporary and permanent rights-of-way. No wetlands would be lost because of construction, although some forested wetlands would be maintained according to our Procedures as emergent or scrub/shrub wetlands. About 9.57 acres of forested wetlands would be impacted by construction of the loops. About 5.47 acres would be maintained as part of the ANR pipeline right-of-way. The remaining 4.12 acres would be returned to forested wetlands.

4. Wildlife and Threatened and Endangered Species

a. Wildlife

Wildlife species inhabiting the area of the proposed pipeline routes are those characteristic of agricultural lands, wetlands, and forested uplands in Indiana and Illinois.

Construction of the loop would result in minor and temporary impact on wildlife. Some smaller and less mobile species would be destroyed by construction equipment. Construction would also result in the temporary alteration of habitat with some wildlife species returning to these altered areas after revegetation has occurred. Numerous areas along the proposed route are already disturbed by existing pipeline right-of-way, existing roadways, agricultural lands, and residences. Because of the amount of existing disturbance along the pipeline routes and the temporary and minor nature of impact during construction, the overall impact on general wildlife would not be significant.

b. Threatened and Endangered Species

To comply with section 7 requirements of the Endangered Species Act, ANR, acting as the Commission's non-Federal representative, conducted informal consultation with the FWS, Indiana Department of Natural Resources (INDNR), and the Illinois Department of Natural Resources (ILDNR) regarding the presence of federally listed or proposed threatened and endangered species in the project area. The Illinois FWS field office and the ILDNR indicated that no Federal or state listed species would be affected by the West of St. John Loop portion of the project in letters dated September 24 and March 22, 1996, respectively.

The INDNR indicated that a state-listed plant, *Spiranthes lucida* (shining ladies' tresses) could be present along the East of St. John Loop. However, this species was not found during field surveys conducted by ANR's consultant in April 1996.

In a letter dated January 10, 1997, the FWS's Indiana field office identified two federally listed species which could be present in the project area, the Indiana bat and the bald eagle. The Indiana bat is a federally endangered species which utilizes forested waterways for roosting, reproduction, and foraging in spring and summer. This species is found in hollow trees or trees with peeling bark alongside small or medium-sized streams. However, no surveys have been conducted for the Indiana bat to date. The bald eagle, a federally threatened species, is an occasional winter visitor, but is not known to nest in this part of the state. Because construction would not occur during the wintering season, the species would not be affected by the proposed project.

Because consultation with FWS is not complete, we recommend that **ANR conduct surveys, where necessary, for the Indiana bat in the appropriate habitat along the East of St. John Loop during the appropriate survey period. Before the initiation of surveys, ANR should consult with the U.S. Fish and Wildlife Service (FWS) for appropriate survey methods and periods for the Indiana bat. The survey reports and any FWS comments on the survey and its conclusions should be filed with the Secretary. The survey reports should include the following information:**

a. name(s) and qualifications of the person(s) conducting the survey;
b. method(s) used to conduct the survey;
c. date(s) of the survey;
d. area surveyed (include the mileposts surveyed); and
e. proposed mitigation that would substantially minimize or avoid the potential impacts.

ANR should receive written approval from the Director of OPR before implementing any mitigation measures.

5. Land Use

Based on an 85-foot-wide construction right-of-way for the two loops, extra work area requirements, and construction of associated facilities; about 132.7 acres would be temporarily impacted and about 53.6 acres would be permanently impacted. ANR would construct the 11.9 miles of 42-inch-diameter loop in two segments. See table 3 for the land use/vegetation summary.

a. West of St. John Loop

Construction of the West of St. John Loop is expected to temporarily impact about 18.33 acres and to permanently impact about 6.96 acres.

It is anticipated that 16 temporary work spaces would be required totaling 1.84 acres of land. The temporary work spaces include 1.38 acres of open lands, 0.23 acre of agricultural lands and 0.23 acre of forested lands. About 2 acres of industrial/ commercial land (owned by ANR) near the beginning of the loop would be used as a contractor yard.

b. East of St. John Loop

Construction of the East of St. John Loop is expected to temporarily impact about 114.17 acres and to permanently impact about 46.49 acres.

It is anticipated that 86 temporary work spaces would be required for this loop, totaling 9.89 acres of land. The temporary work spaces would include 3.68 acres of open lands,

TABLE 3

LAND USE/VEGETATION TYPE SUMMARY[1]

Facility	Agriculture		Open Land		Forested		Residential / Industrial / Commercial		Other	
	Const. (acres)	Perm. (acres)	Const. (acres)	Perm. (acres)	Const. (acres)	Perm. (acres)	Const. (acres)	Perm. (acres)	Const. (acres)	Perm. (acres)
West of St. John Loop	9.66	3.98	5.75	2.34	0.14	0.08	0.94	0.39	0.00	0.00
East of St. John Loop	42.41	19.13	32.88	12.98	12.50	7.59	14.21	5.85	2.28	0.94
Total	52.07	23.11	38.63	15.32	12.64	7.67	15.15	6.24	2.28	0.94

[1] Acreage disturbed during construction (Const.) and acreage permanently (Perm.) maintained as right-of-way.

2.07 acres of agricultural lands, 2.07 acre of forested lands, 1.84 acres of residential lands and 0.23 acre of other (school) lands. The proposed loop would be about 250 feet from the nearest school building, and its athletic track and fields would be crossed between MPs 878.0 and 879.0.

The proposed loop deviates from the existing pipeline rights-of-way at two locations. The first deviation is located between MPs 875.5 and 876.0 to avoid a recently constructed sewage treatment plant and a day care center. The second deviation is located between MPs 880.2 and 881.3 to avoid impacting two residences during the directional drilling of the I-94 Toll Road and Highway 49. Without the reroute, the length of the directional drill would be about 2200 feet. The staging area would need to be located in the backyards of the two residences. Also a storage area would be needed in the backyards to contain the spoil generated from the drilling operation. The reroute would be in agricultural land and would avoid residents' yards. Both the toll road and highway would be crossed by separate directional drills about 500 feet in length.

Construction of the reroutes would require a 75-foot-wide construction right-of-way, comprised of a 50-foot-wide permanent right-of-way centered over the pipeline, and 25 feet of temporary workspace.

c. Associated Facilities

The proposed addition of the aftercooling bay to the St. John Compressor Station would be constructed within the existing facility boundaries. The construction would require about 2 acres for temporary work areas. The land is owned and maintained by ANR within the compressor station yard.

The proposed project includes the relocation of an existing pig launcher station and a receiver station. About 0.10 acre of land for each station would be required for temporary work areas. In addition, about 0.17 acre land for each station would be permanently impacted by each facility. The land that is to be acquired by ANR for the pig launcher and receiver stations is classified as open and agricultural lands, respectively.

d. Residential Areas

On the East of St. John Loop, 11 residences have been identified within 50 feet of the construction right-of-way (See table 4). ANR's site-specific construction plan for each residence includes the following measures:

- pre-assembled drag sections of pipe would be used to minimize the time required to install the proposed pipeline;

Table 4

Residences within 50 feet of the Construction Right-of-Way

Loop	Milepost	Distance from Construction Right-of-way (feet)
East of St. John	877.2	10
	877.9	26
	878.0	17
	878.2	25
	878.2	16
	878.2	10
	878.2	10
	884.3	10
	884.3	20
	884.3	41
	884.8	11

- the distance between the proposed pipeline and existing pipeline would be reduced to 10 or 15 feet;

- the construction contractor would be provided with a construction line list that:

  - includes a detailed description of the construction procedures to be used on each landowner tract;
  - requires the contractor to prepare a drag section of pipeline before excavating the trench near residences closer than 25 feet to the construction work area;
  - that requires the contractor to dig the trench when the drag section is complete and then to immediately install the drag section and backfill the trench to rough grade.

- the mature trees and landscaping within the edge of the construction work area, unless necessary for safe

operation of construction equipment, would not be removed;

- immediately after backfilling the trench, all areas within the construction work area would be restored consistent with the existing grade;

- fencing would be installed along the edge of the construction work area adjacent to the residence for a distance of 100 feet on either side of the residence to ensure that construction equipment and materials, including the spoil pile, remain within the construction work area;

- land agents would be on-site to notify landowners of the construction schedules for activities to occur on their respective properties;

- access to residences would be maintained during construction activities where required, and temporary fences and barricades would be provided during off-work hours to reduce the hazard of any open trenches; and

- water trucks would spray the disturbed right-of-way as required to control fugitive dust from the construction activities.

ANR would maintain a 10 foot buffer between residences and work spaces and would place fencing at the edge of this buffer. We believe that use of the mitigation measures in residential areas would minimize impacts to residents.

Two residential/commercial developments were identified on the East of St. John Loop. The loop crosses Unit 3 of the Mallard Landing planned development between MPs 877.1 and 877.2 (400 feet). The development is currently offering lots for sale. The loop also crosses a planned community development between MPs 880.8 and 882.0. The development is in the planning stage and the developer is still in the process of acquiring property. ANR would negotiate with the respective developers to minimize impacts. Houses are being constructed in other areas along the loop between 50 and 100 feet of the existing pipelines.

On the West of St. John Loop, no residences within 50 feet of the construction right-of-way or planned residential/ commercial developments were identified. Although no residences were identified, a building used as a workshop was identified to be within 50 feet of the construction right-of-way. Moveable storage racks and a shed are on the right-of-way. ANR would relocate the racks and shed temporarily during construction and then return them to their original locations when construction is complete.

A long-term impact associated with pipeline operation includes the additional easements for the permanent right-of-way and restrictions on land use within the easements. The permanent easements would prohibit certain types of use, such as construction of permanent aboveground structures. The new easements would add an additional 25-foot width to ANR's existing easements that have the same building restrictions. In the areas of the two reroutes, a 50-foot-wide permanent easement would be obtained. The reroutes are further from existing residences than the corridor along the existing rights-of-way.

At the reroute planned near MP 880.2 the pipeline would be about 123 feet south of the residences in this area. The loop should not greatly affect any future development of the properties in this area. The loop itself is far enough away from the homes that any future additions to the homes would not be affected. At MP 880.7, ANR shifted the proposed pipeline route away from a nearby residence into an agricultural field.

The easements give ANR the right to construct the pipeline (within the construction right-of-way), and to operate and maintain the pipeline within the permanent right-of-way. In return, ANR compensates the landowner for use of the land. The easement negotiations between ANR and the landowner would also include compensation for loss of use during construction; loss of non-renewable or other resources; damage to property during construction; and for the permanent right-of-way.

If an easement cannot be negotiated with the landowner, and the project has been certificated by the Commission, ANR may use the right of eminent domain granted to it under section 7(h) of the NGA and the rules of Civil Procedure to obtain rights-of-way. ANR would still be required to compensate the landowner for the right-of-way as well as any damages incurred during construction. However, the level of compensation would be determined by the court according to Federal or state laws that set forth the procedures for the use of eminent domain once the FERC has issued a certificate.

A Portage Township park, the Haven Hollow Park, was identified along the East of St. John Loop. The proposed loop would cross the park between MPs 875.3 and 875.5 for about 1,409 feet through a forested area of the park adjacent to the existing pipeline. Robert Filpas, park manager, was contacted on January 23, 1997, to determine if he had any concerns. He stated that since the loop would be adjacent to the existing pipelines he had no concerns. In addition, a private park was identified in close proximity to the loop (near MP 850.9), but the park is for sale and is not presently in use. No other public lands, recreation areas or other designated areas were identified in the vicinity of the loops.

Both the pig launcher and receiver would be located on the opposite side of roads from houses. Both sites are on abandoned agricultural land with no other development in the nearby vicinity. Hedgerows along the road would screen the launcher and receiver from the homes. A 200-foot-long and a 500-foot-long access road would be constructed for the launcher and receiver sites, respectively. The launcher would be 250 feet from the closest house, and the receiver would be 700 feet from the closest house. No adverse visual impacts would occur in the vicinity of the pig launcher and receiver sites.

General aesthetic impacts are minimized by routing the proposed loops predominately in agricultural lands. The impacts on forested areas are minimized by routing the pipeline along the existing rights-of-way. In addition, the results of short-term and long-term impacts would be minimal as most of the new right-of-way is adjacent to ANR's existing pipeline rights-of-way. The aboveground facilities would be screened from nearby residences by existing hedgerows thereby minimizing visual effects. No designated visually sensitive areas were identified in the project area.

6. Cultural Resources

ANR conducted cultural resources overviews and surveys for both the East of St. John Loop and the West of St. John Loop. For the West of St. John Loop, one prehistoric isolated find was located. This isolate was recommended as not being eligible for the National Register of Historic Places (NRHP). The Illinois State Historic Preservation Office (SHPO) indicated that "no significant historic, architectural, and archaeclogical resources are located in the project area" (letter dated January 13, 1997). We agree. For the East of St. John Loop, two prehistoric sites and one historic site were located. None of these were recommended as being eligible for the NRHP. We are currently awaiting the Indiana SHPO's comments.

ANR contacted the Indiana SHPO regarding the addition of the aftercooling bays at the St. John Compressor Station. The SHPO responded that "[a]s long as no structures will be demolished or removed and the project remains within areas disturbed by previous construction..." no NRHP listed or eligible sites would be affected (letter dated October 30, 1996). We agree, since no structures would be demolished, and the aftercooling bay would be placed in a previously disturbed area.

ANR is currently consulting with the Indiana and Illinois SHPOs regarding the need for surveys and the appropriate level of intensity of those surveys for a temporary access road and pig launcher on the East of St. John Loop, and the contractor's yard and pig receiver on the West of St. John Loop (letters dated August 28 and 30, 1996, respectively). We are currently awaiting

the SHPOs' response. ANR has not yet identified the contractor's yard located near MP 878 of the East of St. John Loop to the Indiana SHPO.

The Illinois State Museum Society, on behalf of ANR, has contacted the Potawatomi tribe (Citizen Band - Oklahoma, Prairie Band - Kansas, Pokagon Band - Michigan, Nottawaseppi Huron Band-Michigan, Hannahville Indian Community Council - Michigan, and the Forest County Executive Council - Wisconsin) and the Miami Tribe of Oklahoma (letters dated May 19, 1996). No responses have been received to date. ANR has also contacted the Indiana SHPO regarding appropriate Indian tribes, Native American groups, ethnic groups, and other interested persons to contact concerning cultural resource issues (letter dated August 30, 1996). The SHPO has not yet responded. ANR has agreed to provide any resulting documentation.

ANR has provided a draft plan for the unanticipated discovery of historic properties and human remains, and has indicated that it would be provided to the SHPOs for review.

We recommend that ANR defer construction and use of the loops; contractor's yards, staging, storage, and temporary work areas; and new or to-be-improved access roads until ANR files with the Secretary cultural resource reports and plans, as appropriate, and the SHPOs' comments, and the Director of OPR reviews and approves all reports and plans and notifies ANR in writing that it may proceed.

All material containing location, character, and ownership information about cultural resources must have the cover and any relavant pages therein clearly labeled in bold lettering: "CONTAINS PRIVILEGED INFORMATION -- DO NOT RELEASE."

7. Air and Noise Quality

Construction would cause a temporary reduction in local ambient air quality as a result of fugitive dust and emissions from construction equipment. The overall air and noise impacts would be short-term and temporary. Once the construction phase is complete, fugitive dust and equipment emissions would subside. Construction in residential areas would take place only during daylight hours.

8. Pipeline Safety

ANR has certified that its facilities would be designed, constructed, operated, and maintained in accordance with DOT Minimum Federal Safety Standards specified in 49 CFR Part 192. These regulations are meant to ensure adequate protection for the public and to prevent natural gas pipeline accidents and failures. Part 192 defines and specifies:

- Material selection and qualification;
- Minimum design requirements;
- Protection for internal, external, and atmospheric corrosion; and
- Area classifications, based on population density.

More stringent safety considerations are required in populated areas. The safety standards specified in Part 192 require each pipeline operator to:

- develop an emergency plan, working with local fire departments and other agencies to identify personnel to be contacted, equipment to be mobilized, and procedures to be followed to respond to a hazardous condition caused by the pipeline;

- establish and maintain a liaison with the appropriate fire, police, and public officials in order to coordinate mutual assistance when responding to emergencies; and

- establish a continuing education program to enable customers, the public, government officials, and those engaged in excavation activities to recognize a natural gas pipeline emergency and report it to appropriate public officials.

The transportation of natural gas by pipeline involves some degree of risk to the public in the event of an accident and subsequent release of natural gas. The greatest hazard is the possibility of fire or explosion following a major pipeline rupture. Unconfined mixtures of methane in air are not explosive. However, a flammable concentration within an enclosed space in the presence of an ignition source can explode.

In the event of fire due to a natural gas leak or rupture, the pipeline company would be responsible for shutting off the supply of natural gas to the leaking section of pipeline. Once the leaking pipeline section is isolated, the fire would be allowed to burn itself out. Local fire departments would be responsible only for controlling the spread of secondary fires to any dwellings, structures, and property in the general area at risk.

Beginning in February 1970, 40 CFR Part 191 required all operators of transmission and gathering systems to notify the DOT of specific types of incidents that occurred during operation of the approximately 300,000 miles of natural gas transmission and gathering systems nationwide. The number of failures during a 14-year period, from February 1970 through June 1984, remained fairly constant, with no upward or downward trends. Slightly more than half of the operational failures were caused by outside

forces, defined as the encroachment of mechanical equipment, such as bulldozers and backhoes; from earth movements, such as washouts or geologic hazards; from weather effects, such as winds, storms, and thermal strains; and from willful damage. An analysis of the outside forces causing pipeline failures indicates that human error in equipment usage accounts for about 75 percent of all such incidents.

The frequency of failure during operation is strongly dependent on pipeline age, with pipelines installed prior to 1950 exhibiting a significantly higher incidence of failure. Older pipelines have a higher frequency of corrosion, since corrosion is a time-dependent process and new pipe generally has more advanced coatings and cathodic protection to reduce corrosion potential. The use of both an external protective coating and a cathodic protection system, required on all pipelines installed after July 1971, significantly reduces the rate of failure over unprotected or partially protected pipe. Older pipelines also have a higher frequency of incidents caused by outside forces, in part because they may be less well marked and, in part, because older pipelines tend to be of a smaller diameter and are more easily crushed or broken by mechanical equipment or earth movement.

The average number of nonemployees killed in gas transmission and gathering line accidents per year is 2.5 (based on 1970-1984 data). This translates to a public fatality rate of 0.008 per 1,000 miles of transmission and gathering lines per year for the entire national network. The proposed pipeline facilities would cause only a slight increase in risk to the nearby public.

C. ALTERNATIVES

1. No Action Alternative

The no-action alternative would not expand the Michigan Leg South System. While this option would not create any localized environmental disturbances, it would deny corresponding gas supply flexibility to customers on ANR's pipeline system. The summer capacity strain on this part of ANR's system would continue.

2. Systems Alternatives

An alternative for the Michigan Leg South System would be the addition of horsepower at the St. John and Bridgman Compressor Stations in Lake County, Indiana and Berrien County, Michigan, respectively. ANR stated that for the 135 MMcf per day expansion, an additional 2,000 horsepower compressor unit at the St. John Compressor Station and 12,000 horsepower compressor unit at the Bridgman Compressor Station would be necessary if no loops

were installed. Additionally, because of the increased pressure ratios at these sites, engine modifications to existing compressor units and additional aftercooling would be required.

The St. John Compressor Station is surrounded by housing developments to the north, south, and east. The existing noise level at the nearest noise sensitive area (NSA) 450 feet south of the compressor station is a day-night sound level (L_{dn}) of 57 decibels measured on the A-weighted scale (dBA) which already exceeds our noise limit of 55 dBA for new compressors. Extensive noise control measures have already been installed at the station including a sound barrier (a 10-foot-tall precast concrete wall) around three sides of the station. Although the Bridgman Compressor Station is located in a less populated area, the noise level at the nearest NSA 1200 feet north is an L_{dn} of 55 dBA. The additional 12,000 hp compressor unit would increase the noise level above our limit of 55 dBA at the closest NSA unless additional noise control measures are taken. Additional gas-fueled compression at either of these compressor stations could have a negative impact on the air and noise quality in the vicinity.

Finally, the addition of compression only would not provide the same reliability and continuity of service that the looping could provide in the event of a mainline outage.

Because the area in the vicinity of the loops has grown rapidly, a reroute to avoid residential areas would be nearly impossible, unless a much longer reroute is constructed. Many new areas are under development. Lots are about 1 acre or less which would still put the new pipelines near residences.

Avoiding wetlands would require the clearing of new right-of-way through forested areas or would put the pipeline close to residences. Wetlands along streams cannot be avoided without major reroutes since the wetlands extend for long distances along the streams. Because the majority of the route for the loops follows ANR's existing rights-of-way the clearing of forested wetlands, upland forests and scrub/shrub wetlands is minimized. Most of the area at forested wetlands and shrub/scrub wetlands that are disturbed by construction would be allowed to revegetate with woody vegetation. Consequently, we were not able to identify any system alternative that we preferred over the proposed project.

D. STAFF'S CONCLUSION AND RECOMMENDATIONS

The Environmental Review and Compliance Branch I concludes that approval of this proposal would not constitute a major Federal action significantly affecting the quality of the human environment. This finding is based on the above environmental analysis, ANR's application and supplements filed September 10,

October 1, and November 5, 1996, and implementation of our mitigation measures below. We recommend that the Commission Order contain a finding of no significant impact and include the mitigation measures below as conditions to any certificate the Commission may issue. Responses to conditions 4 through 9 will assist us when we conduct field inspections and compliance monitoring activities.

1. ANR shall follow the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests) and as identified in the environmental assessment (EA), unless modified by this Order. ANR must:

   a. request any modification to these procedures, measures, or conditions in a filing with the Secretary of the Commission (Secretary);
   b. justify each modification relative to site-specific conditions;
   c. explain how that modification provides an equal or greater level of environmental protection than the original measure; and
   d. receive approval in writing from the Director of the Office of Pipeline Regulation (OPR) **before using that modification.**

2. The Director of OPR has delegation authority to take whatever steps are necessary to insure the protection of all environmental resources during construction and operation of the project. This authority shall allow:

   a. the modification of conditions of this Order; and
   b. the design and implementation of any additional measures deemed necessary (including stop work authority) to assure continued compliance with the intent of the environmental conditions as well as the avoidance or mitigation of adverse environmental impact resulting from project construction and operation.

3. **Prior to any construction**, ANR shall file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, environmental inspectors, and contractor personnel will be informed of the environmental inspector's authority and have been or will be trained on the implementation of the environmental mitigation measures appropriate to their jobs **before** becoming involved with construction and restoration activities.

4. The authorized facility locations shall be as shown in the EA, as supplemented by filed alignment sheets. **As soon as they are available, and before the start of construction,**

ANR shall file with the Secretary any revised detailed survey alignment maps/sheets at a scale not smaller than 1:6,000 with station positions for all facilities approved by this Order. All requests for modifications of environmental conditions of this Order or site-specific clearances must be written and must reference locations designated on these alignment maps/sheets.

5. ANR shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all staging areas, pipe storage yards, new access roads, and other areas that would be used or disturbed and have not been previously identified in filings with the Secretary. Approval for areas must be explicitly requested in writing. All areas shall be clearly identified on the maps/sheets/aerial photographs. Each area must be approved in writing by the Director of OPR **before construction** in or near that area.

   This requirement does not apply to minor field realignments per landowner needs and requirements which do not affect other landowners or sensitive environmental areas such as wetlands.

   Examples of alterations requiring approval include all route realignments and facility location changes resulting from:

   a. implementation of cultural resources mitigation measures;
   b. implementation of endangered, threatened, or special concern species mitigation measures;
   c. recommendations by state regulatory authorities; and
   d. agreements with individual landowners that affect other landowners or could affect sensitive environmental areas.

6. **Within 60 days of the acceptance of this certificate** and **before construction** begins, ANR shall file an initial Implementation Plan with the Secretary for review and written approval by the Director of OPR describing how ANR will implement the mitigation measures required by this Order. ANR must file revisions to the plan as schedules change. The plan shall identify:

   a. how ANR will incorporate these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to onsite construction and inspection personnel;
   b. the number of environmental inspectors assigned per spread, and how the company will ensure that sufficient

personnel are available to implement the environmental mitigation;

c. company personnel, including environmental inspectors and contractors, who will receive copies of the appropriate material;

d. what training and instructions ANR will give to all personnel involved with construction and restoration (initial and refresher training as the project progresses and personnel change).
the company personnel (if known) and specific portion of ANR's organization having responsibility for compliance;

e. the procedures (including use of contract penalties) ANR will follow if noncompliance occurs; and

f. for each discrete facility, a Gantt or PERT chart (or similar project scheduling diagram), and dates for:

(1) the completion of all required surveys and reports;
(2) the mitigation training of onsite personnel;
(3) the start of construction; and
(4) the start and completion of restoration.

7. ANR shall file updated status reports prepared by the environmental inspector with the Secretary on a **biweekly** basis **until** all construction-related activities, including restoration and initial permanent seeding, are complete. On request, these status reports will also be provided to other Federal and state agencies with permitting responsibilities. Status reports shall include:

a. the current construction status of the project, work planned for the following reporting period, and any schedule changes for stream crossings or work in other environmentally sensitive areas;

b. a listing of all problems encountered and each instance of noncompliance observed by the environmental inspector(s) during the reporting period (both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other Federal, state, or local agencies);

c. corrective actions implemented in response to all instances of noncompliance, and their cost;

d. the effectiveness of all corrective actions implemented;

e. a description of any landowner/resident complaints which may relate to compliance with the requirements of this Order, and the measures taken to satisfy their concerns; and

f. copies of any correspondence received by ANR from other Federal, state or local permitting agencies concerning instances of noncompliance, and ANR's response.

8. ANR must receive written authorization from the Director of OPR **before commencing service** from the project. Such authorization will only be granted following a determination that rehabilitation and restoration of the right-of-way is proceeding satisfactorily.

9. **Within 30 days of placing the certificated facilities in service**, ANR shall file an affirmative statement with the Secretary, certified by a senior company official:

   a. that the facilities have been constructed in compliance with all applicable conditions, and that continuing activities will be consistent with all applicable conditions; or
   b. identifying which of the certificate conditions ANR has complied with or will comply with. This statement shall also identify any areas along the right-of-way where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.

10. ANR shall conduct surveys, where necessary, for the Indiana bat in the appropriate habitat along the East of St. John Loop during the appropriate survey period. Before the initiation of surveys, ANR shall consult with the U.S. Fish and Wildlife Service (FWS) for appropriate survey methods and periods for the Indiana bat. The survey reports and any FWS comments on the survey and its conclusions shall be filed with the Secretary. The survey reports shall include the following information:

    a. name(s) and qualifications of the person(s) conducting the survey;
    b. method(s) used to conduct the survey;
    c. date(s) of the survey;
    d. area surveyed (include the mileposts surveyed); and
    e. proposed mitigation that would substantially minimize or avoid the potential impacts.

    ANR shall receive written approval from the Director of OPR before implementing any mitigation measures.

11. ANR shall defer construction and use of the loops; contractor's yards, staging, storage, and temporary work areas; and new or to-be-improved access roads until ANR files with the Secretary cultural resource reports and plans, as appropriate, and the SHPOs' comments, and the Director of OPR reviews and approves all reports and plans and notifies ANR in writing that it may proceed.

All material containing location, character, and ownership information about cultural resources must have the cover and any relavant pages therein clearly labeled in bold lettering: **"CONTAINS PRIVILEGED INFORMATION -- DO NOT RELEASE."**

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Kopka, Robert - FERC Project Manager; Soils, Geology, Water Resources, Land Use, Alternatives, Wetlands, Vegetation, Proposed Action
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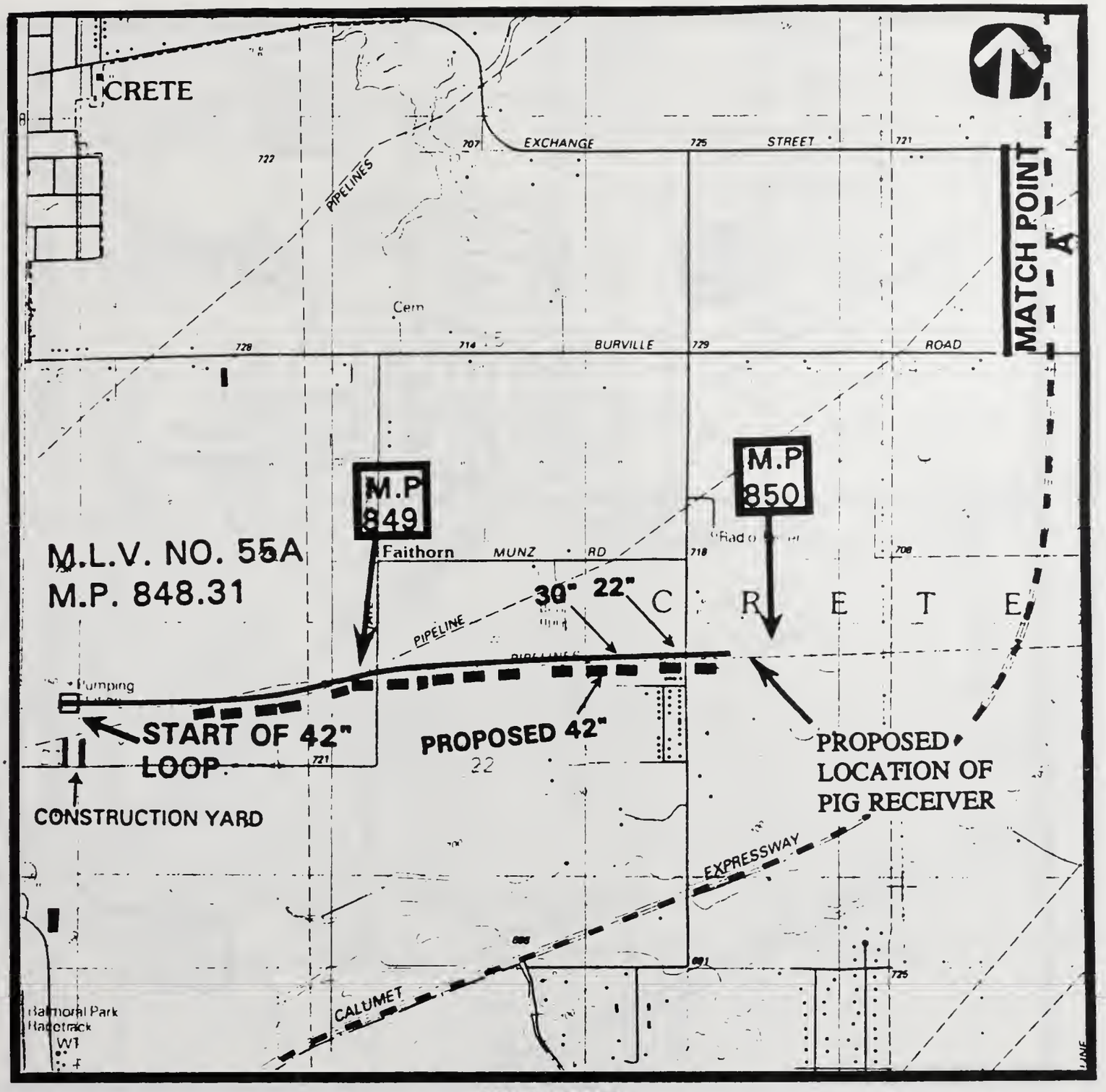
APPENDIX A

FACILITY MAPS



42". LOOP

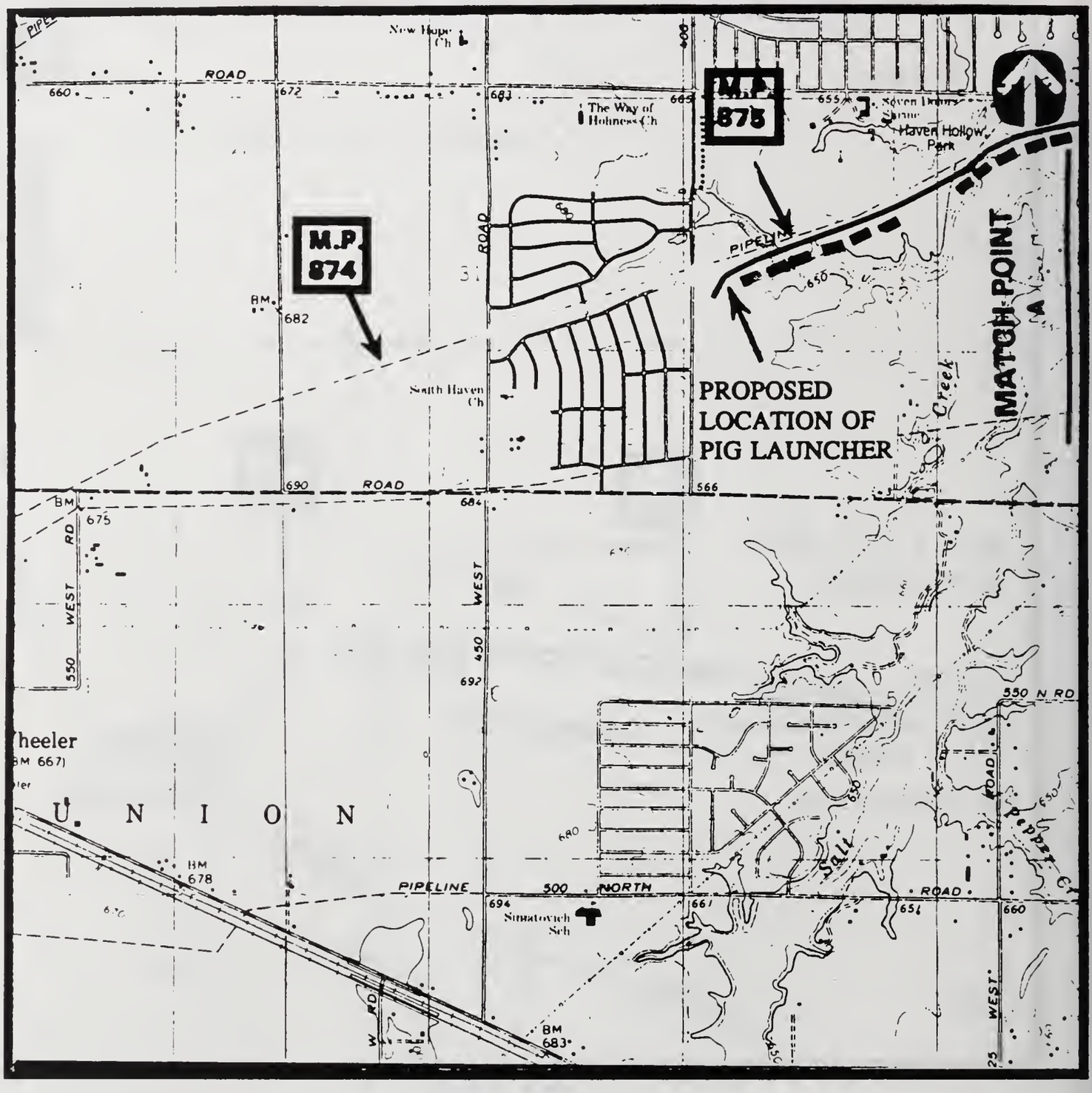
EXTRA WORK AREAS

MAP REFERENCE:
U.S.G.S. QUADRANGLE MAP
7-1/2 MINUTE SERIES (TOPOGRAPHIC)
DYER, ILLINOIS-INDIANA 1990

FIGURE 1

ANR Pipeline Company
West of St. John Loop
Will County, Illinois

Dames & Moore



SCALE 1:24 000

0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETER

FIGURE 2

ANR Pipeline Company
East of St. John Loop
Porter County, Indiana

Dames & Moore

42" LOOP

EXTRA WORK AREAS

MAP REFERENCE:
U.S.G.S. QUADRANGLE MAP
7-1/2 MINUTE SERIES (TOPOGRAPHIC)
PORTAGE, INDIANA 1992

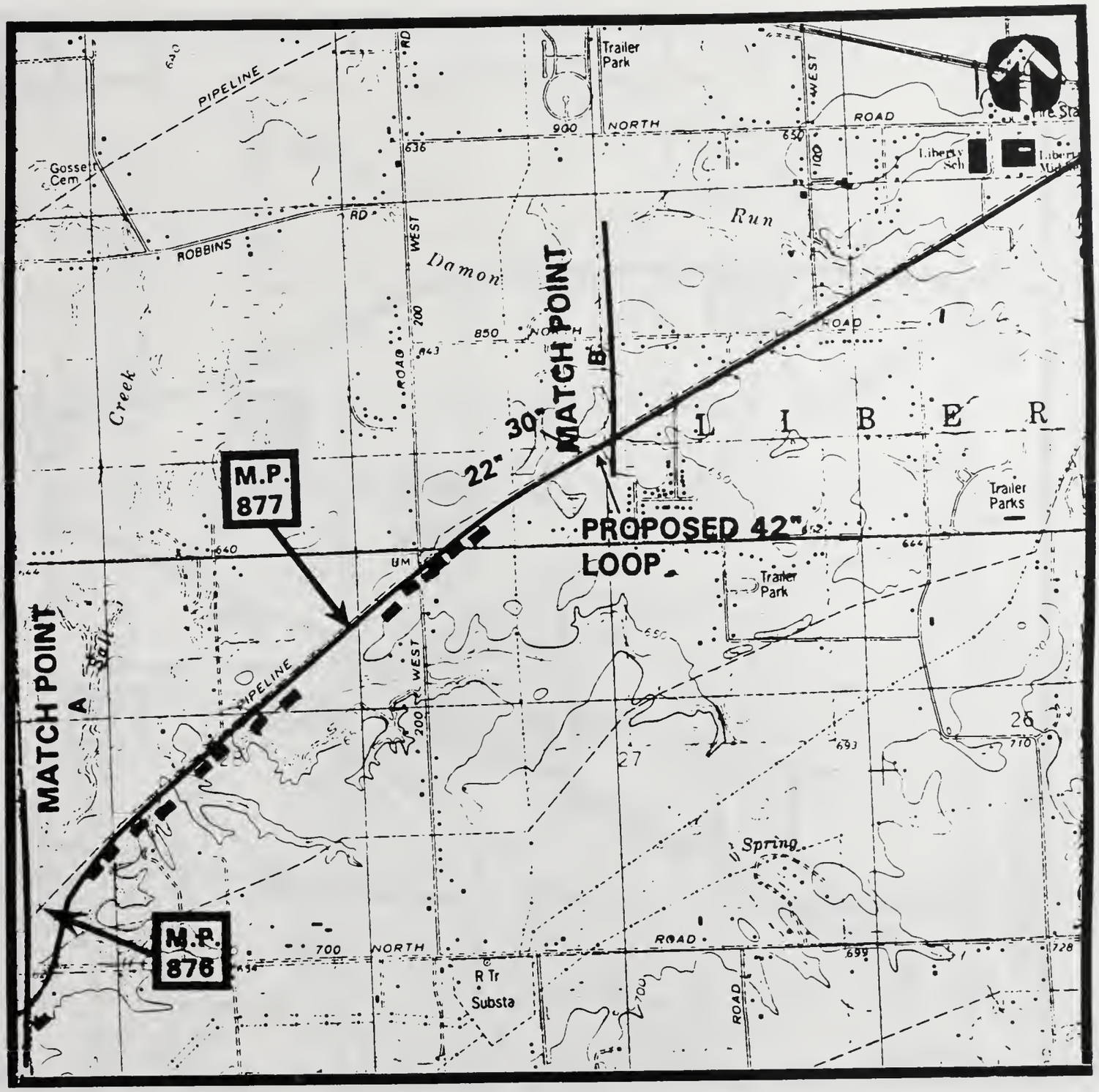


FIGURE 3

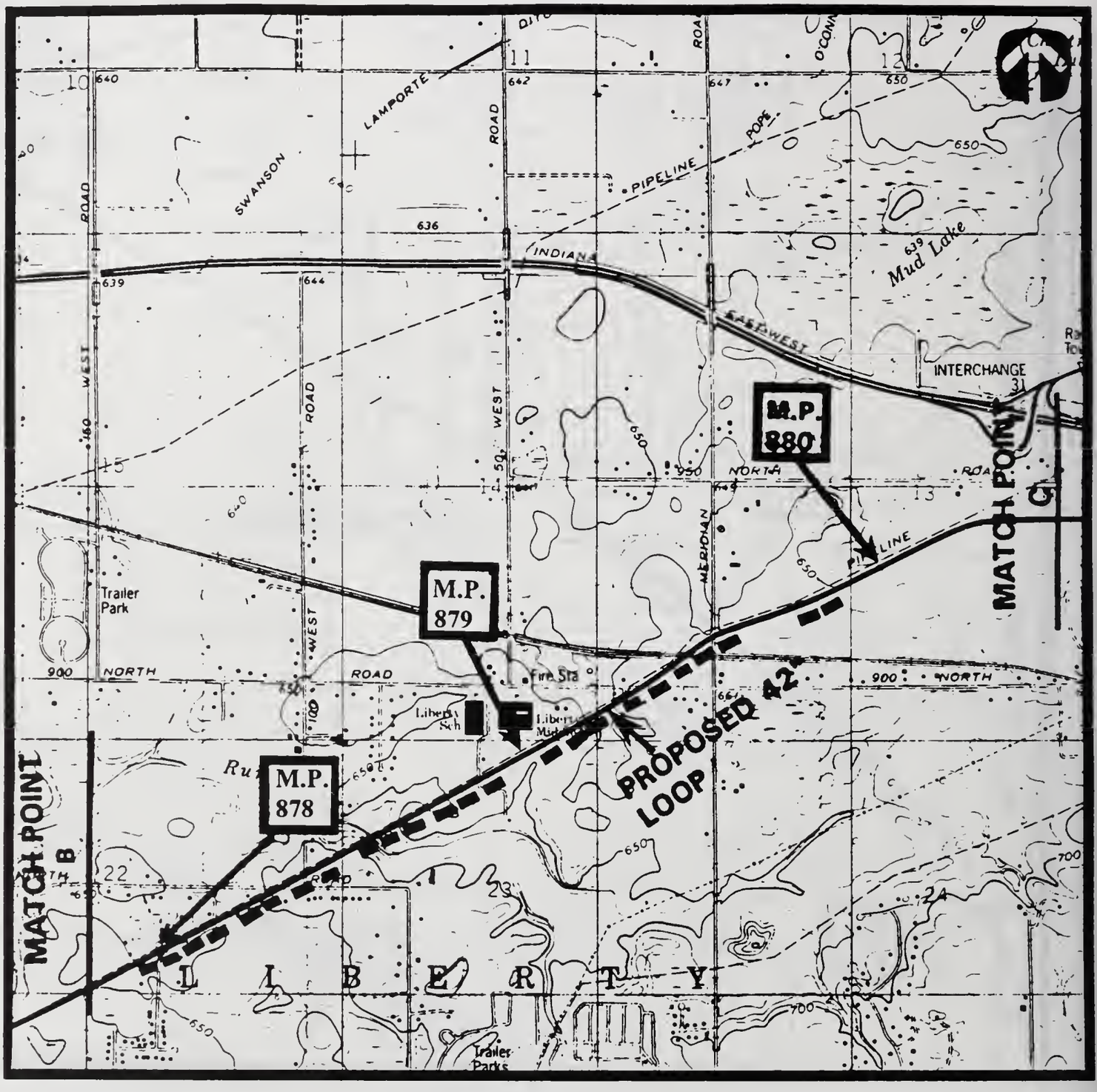
ANR Pipeline Company
East of St. John Loop
Porter County, Indiana

Dames & Moore

42" LOOP

EXTRA WORK AREAS

MAP REFERENCE:
U.S.G.S. QUADRANGLE MAP
7-1/2 MINUTE SERIES (TOPOGRAPHIC)
CHESTERTON, INDIANA 1991



SCALE 1:24000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETER

42" LOOP

EXTRA WORK AREAS

MAP REFERENCE:
U.S.G.S. QUADRANGLE MAP
7-1/2 MINUTE SERIES (TOPOGRAPHIC)
CHESTERTON, INDIANA 1991

FIGURE 4

ANR Pipeline Company
East of St. John Loop
Porter County, Indiana

Dames & Moore

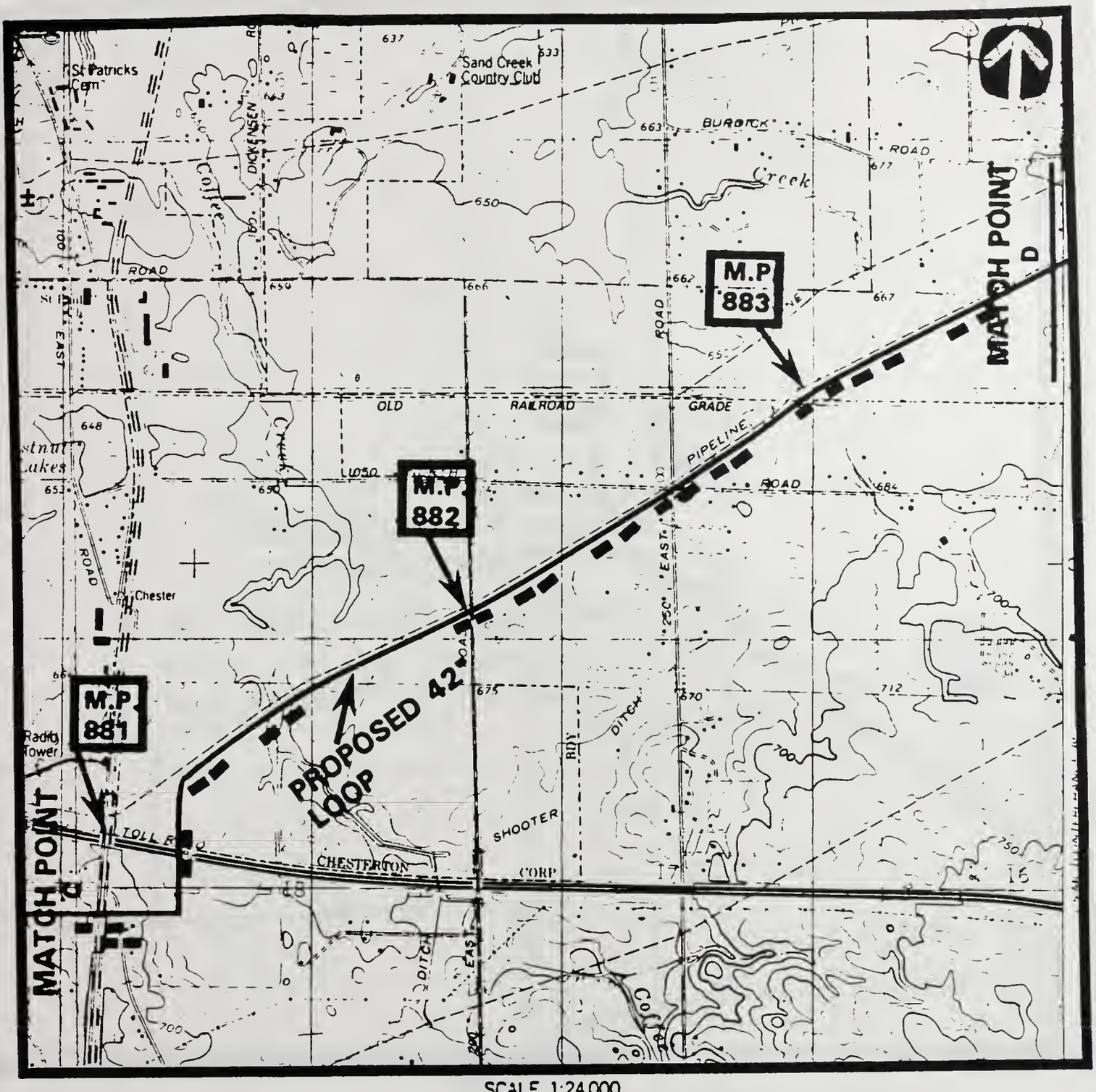


FIGURE 5

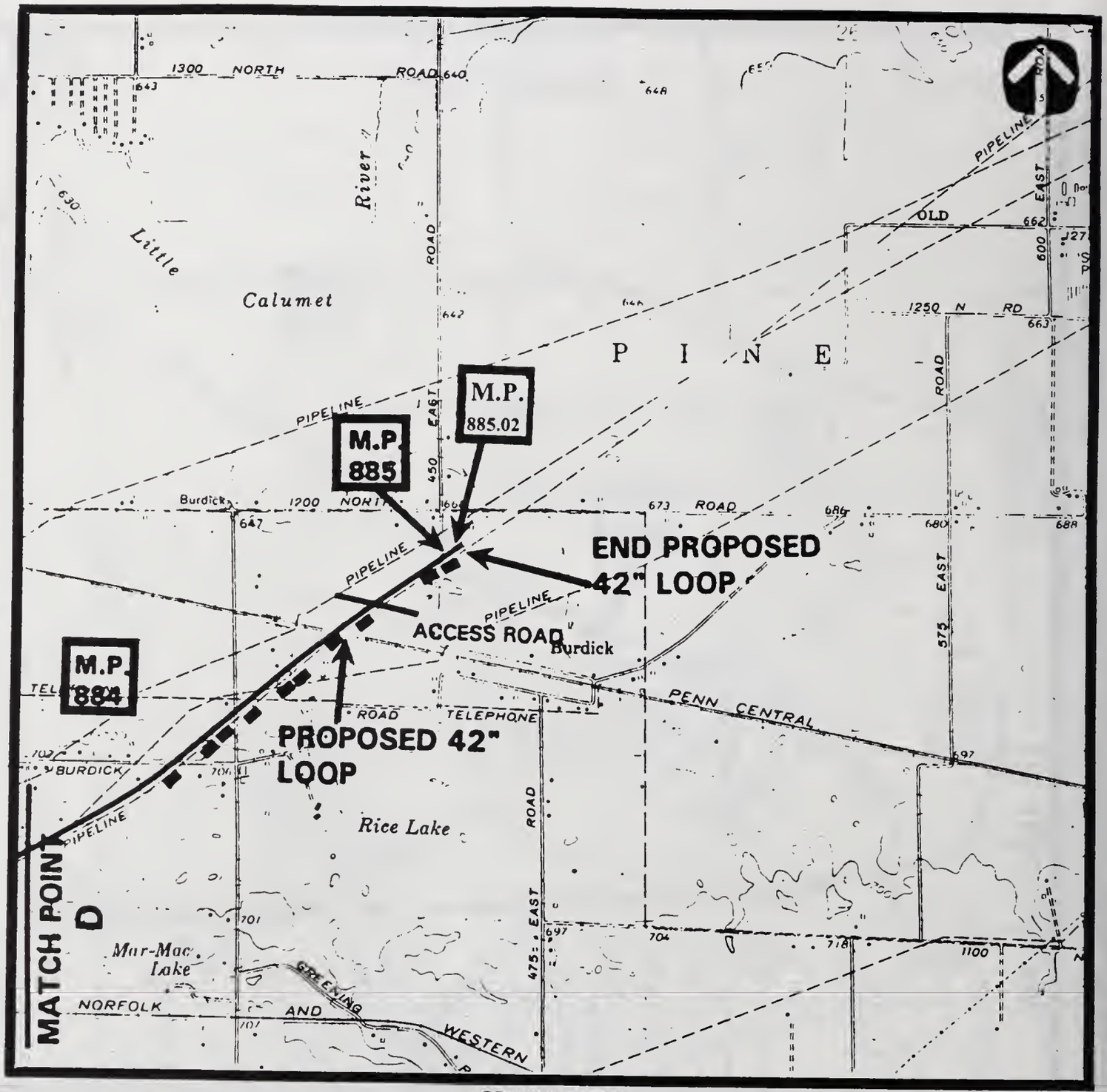
ANR Pipeline Company
East of St. John Loop
Porter County, Indiana

Dames & Moore

42" LOOP

EXTRA WORK AREAS

MAP REFERENCE:
U.S.G.S. QUADRANGLE MAP
7-1/2 MINUTE SERIES (TOPOGRAPHIC)
CHESTERTON, INDIANA 1991



SCALE 1:24 000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETER

42" LOOP

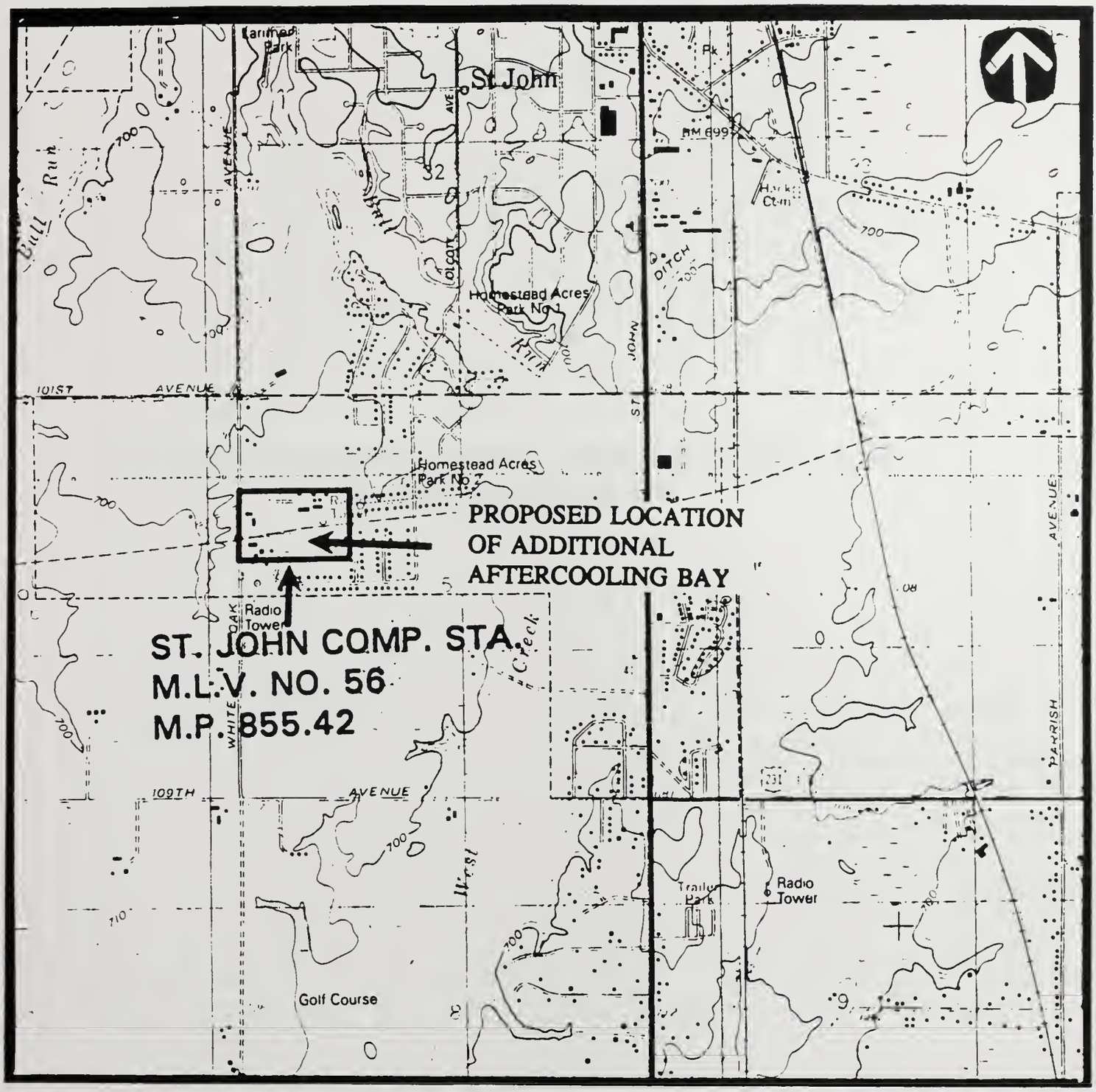
EXTRA WORK AREAS

MAP REFERENCE:
U.S.G.S. QUADRANGLE MAP
7-1/2 MINUTE SERIES (TOPOGRAPHIC)
WESTVILLE, INDIANA 1969
PHOTOINSPECTED 1977

FIGURE 6

ANR Pipeline Company
East of St. John Loop
Porter County, Indiana

Dames & Moore



SCALE 1:24 000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

FIGURE 7

ANR Pipeline Company
St. John Compressor Station
Lake County, Indiana

Dames & Moore

MAP REFERENCE:
U.S.G.S. QUADRANGLE MAP
7-1/2 MINUTE SERIES (TOPOGRAPHIC)
ST. JOHN, INDIANA 1992

APPENDIX B

UPLAND EROSION CONTROL, REVEGETATION, AND MAINTENANCE PLAN

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SURVEY

UPLAND EROSION CONTROL, REVEGETATION, AND MAINTENANCE PLAN

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UPLAND EROSION CONTROL, REVEGETATION, AND MAINTENANCE PLAN (PLAN)

I. APPLICABILITY

A. This Plan applies to all natural gas construction projects where it is imposed by the Commission or agreed to by project sponsors and shall be used for all nonwetland areas of a project. However, the staff encourages using this Plan for all construction and abandonment activities. Wetland and waterbody systems are addressed in the Wetland and Waterbody Construction and Mitigation Procedures **(Procedures)**.

Deviations that involve measures different from those contained in this Plan will only be permitted as certificated by the Commission or by written approval of the Director of the Office of Pipeline Regulation (OPR), or his/her designee, unless specifically required in writing by another Federal, state, or Native American land management agency for the portion of the project on its land. The project sponsor shall file other agency requirements with the Secretary of the Commission (Secretary) before construction.

B. The intent of this Plan is to confine project-related disturbance to certificated areas (such as construction right-of-way, extra work areas, pipe storage yards, and access roads), and to minimize erosion and enhance revegetation in those areas. Any project-related ground disturbance (including erosion) outside of these areas is subject to compliance with all applicable survey and mitigation requirements.

C. The project sponsor shall file with the Secretary the locations and dimensions of all areas that will be disturbed by project-related activities, including pipe storage yards, contractor yards, disposal areas, and access roads as part of its application.

II. PRECONSTRUCTION FILING

A. Before construction begins on a project that will disturb more than 5 acres of land, the project sponsor must file with the Secretary a copy of its Stormwater Pollution Prevention Plan prepared for compliance with the U.S. Environmental Protection Agency's National Stormwater Program General Permit requirements. This plan must be available in the field on each construction spread and shall include a Spill Prevention, Containment, and Countermeasure Plan (see section IV.A. of the Procedures).

B. The project sponsor shall file with the Secretary all written requirements from Federal, state, or Native American land management agencies regarding erosion control, revegetation, or maintenance for the project that deviate from this Plan.

III. SUPERVISION AND INSPECTION

A. ENVIRONMENTAL INSPECTION

1. At least one Environmental Inspector is required for each construction spread during active construction or restoration.

2. Environmental Inspectors shall have peer status with all other activity inspectors.

3. Environmental Inspectors shall have the authority to stop activities that violate the environmental conditions of the FERC certificate or other authorizations and order corrective action.

B. RESPONSIBILITIES OF ENVIRONMENTAL INSPECTORS

At a minimum, the Environmental Inspector(s) shall be responsible for:

1. Ensuring compliance with the requirements of this Plan, the Procedures, the environmental conditions of the FERC certificate authorization, the mitigation measures proposed by the applicant in the application submitted to FERC, and other environmental permits and approvals;

2. Verifying that the limits of authorized construction work areas and locations of access roads are properly marked before clearing;

3. Verifying the location of drainage and irrigation systems;

4. Identifying stabilization needs in all areas;

5. Locating dewatering structures and slope breakers to ensure they will not direct water into known cultural resources sites or locations of sensitive species;

6. Verifying that trench dewatering activities do not result in the deposition of sand, silt, and/or sediment near the point of discharge into a wetland or waterbody. If such deposition is occurring, the dewatering activity shall be stopped and the design of the discharge shall be changed to prevent reoccurrence;

7. Testing subsoil and topsoil in agricultural and residential areas to measure compaction and determine the need for corrective action;

8. Advising the Chief Inspector when conditions (such as wet weather) make it advisable to restrict construction activities in agricultural areas;

9. Ensuring restoration of contours and topsoil;

10. Approving imported soils for use in agricultural and residential areas;

11. Ensuring that temporary erosion controls are properly installed and maintained, daily if necessary;

12. Inspecting temporary erosion control measures at least:

- on a daily basis in areas of active construction or equipment operation;
- on a weekly basis in areas with no construction or equipment operation; and
- within 24 hours of each 0.5 inch of rainfall;

13. Ensuring the repair of all ineffective temporary erosion control measures within 24 hours of identification;

14. Keeping records of compliance with the environmental conditions of the FERC certificate, and the mitigation measures proposed by the project sponsor in the application submitted to the FERC, and other Federal or state environmental permits during active construction and restoration; and

15. Establishing a program to monitor the success of restoration. See section VIII.A. Implementation of this program may be transferred to the company's operating section upon completion of construction and restoration activities.

IV. PRECONSTRUCTION PLANNING

The project sponsor shall do the following before construction:

A. DRAIN TILE AND IRRIGATION SYSTEMS

1. Contact landowners to locate fields containing drainage tiles and irrigation systems.

2. Contact landowners and local soil conservation authorities to determine the locations of future drain tiles that are likely to be installed within 3 years of the authorized construction.

B. GRAZING DEFERMENT

Develop grazing deferment plans with willing landowners, grazing permittees, and land management agencies to minimize grazing disturbance of revegetation efforts.

C. ROAD CROSSINGS AND ACCESS POINTS

Plan for safe and accessible conditions at all roadway crossings and access points during construction and restoration.

D. DISPOSAL PLANNING

Determine methods and locations for the disposal of timber, slash, chips, and excess rock. Off-site disposal is subject to compliance with all applicable survey and mitigation requirements.

E. AGENCY COORDINATION

1. Coordinate with the appropriate agencies as specified in sections IV.A.2., IV.B., IV.E.2., IV.E.3., V.F.1.b., V.F.3.d., VI.B.2.b., VI.D.2., VI.D.3.b., and VI.D.3.h.

2. Obtain written recommendations from the local soil conservation authorities or land management agencies regarding erosion control and revegetation specifications, both temporary and permanent. Have available all written recommendations from these or other agencies for erosion control and revegetation specifications at the project location.

3. Develop specific procedures in coordination with the appropriate agency to prevent the introduction or spread of noxious weeds and soil pests resulting from construction and restoration activities.

V. INSTALLATION

A. APPROVED AREAS OF DISTURBANCE

1. Confine construction activity and ground disturbance to certificated areas.

2. The construction right-of-way width shall not exceed that described in the project sponsor's FERC application unless otherwise modified by a certificate condition. However, additional construction right-of-way may be used (subject to compliance with all applicable survey and mitigation requirements) in limited areas for full right-of-way width topsoil segregation or where topographic conditions, such as side-slopes, require it to ensure safe construction. In no case shall the construction right-of-way width exceed 100 feet without the prior written approval of the Director of OPR.

B. TOPSOIL SEGREGATION

1. Use topsoil segregation methods in all residential areas and when the construction right-of-way is wider than 30 feet in:

   - annually cultivated or rotated agricultural lands (except pasture);
   - hayfields; and
   - other areas at the landowner's request.

2. Prevent the mixing of topsoil with subsoil by stripping topsoil from either the full work area or from the trench and subsoil storage area (ditch plus spoilside method).

3. In residential areas topsoil replacement (i.e., importation of topsoil) is an acceptable alternative to topsoil segregation.

4. In deep soils (more than 12 inches of topsoil), segregate at least 12 inches of topsoil. In soils with less than 12 inches of topsoil make every effort to segregate the entire topsoil layer.

C. DRAIN TILES

1. Mark drain tile locations identified during construction.

2. Probe all drainage tile systems within the area of disturbance to check for damage.

3. Repair damaged drain tiles to their original or better condition. Do not use filter-covered drain tiles unless the local soil conservation authorities and the landowner agree. Use qualified specialists for testing and repairs.

4. For new pipelines in areas where drain tiles exist or are planned, ensure that the depth of cover over the pipeline is sufficient to avoid interference with drain tile systems. For adjacent pipeline loops in agricultural areas, install the new pipeline with at least the same depth of cover as the existing pipeline(s).

D. IRRIGATION

Maintain water flow in crop irrigation systems, unless shutoff is coordinated with affected parties.

E. ROAD CROSSINGS AND ACCESS POINTS

1. Maintain safe conditions at all road crossings in accordance with the road crossing plans referenced in section IV.C.

2. If crushed stone access pads are used in residential or active agricultural areas, place the stone on synthetic fabric to facilitate removal.

F. TEMPORARY EROSION CONTROL

Install temporary erosion controls immediately after initial disturbance of the soil. Temporary erosion controls must be properly maintained throughout construction (on a daily basis) and reinstalled as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration is complete.

1. Temporary Slope Breakers

a. Temporary slope breakers are intended to reduce runoff velocity and divert water off the construction right-of-way. Temporary slope breakers may be constructed of materials such as soil, silt fence, staked hay or straw bales, or sand bags.

b. Construct temporary slope breakers using the written recommendations of the local soil conservation authorities. In the absence of these recommendations, install temporary slope breakers at the following spacing:

Slope (%)	Spacing (feet)
5 - 15	300
> 15 - 30	200
> 30	100

c. Direct the outfall of each temporary slope breaker to a stable, well vegetated area or construct an energy-dissipating device at the end of the slope breaker and off the construction right-of-way.

d. Inspect and maintain temporary slope breakers as specified in sections III.B.11. through 13.

2. Sediment Barriers

a. Sediment barriers are intended to stop the flow of sediment. They may be constructed of materials such as silt fence, staked hay or straw bales, or sand bags.

b. Install temporary sediment barriers at the base of slopes adjacent to road crossings until disturbed vegetation has been reestablished.

c. Install temporary sediment barriers at appropriate locations to prevent siltation into waterbodies or wetlands crossed by or near the construction work area (as required in the Procedures).

d. Inspect and maintain all temporary sediment barriers as specified in sections III.B.11 through 13.

e. Maintain all temporary sediment barriers in place until permanent revegetation measures are successful or the upland areas adjacent to wetlands, waterbodies, or roads are stabilized.

f. Remove temporary sediment barriers from an area when that area is successfully restored as specified in section VIII.A.6.

3. Mulch

a. Mulch is intended to stabilize the soil surface. Mulch can consist of straw, hay, erosion control fabric, or some functional equivalent.

b. Apply mulch in accordance with the specifications outlined in this section except, if mulching before seeding, increase mulch application

on all slopes within 100 feet of waterbodies and wetlands to a rate of 3 tons/acre.

c. Mulch before seeding if:

(1) final cleanup, including final grading and installation of permanent erosion control measures, is not completed in an area within 10 days after the trench in that area is backfilled; or

(2) construction or restoration activity is interrupted for extended periods, such as when seeding cannot be completed due to seeding period restrictions;

d. On all dry, sandy sites and slopes greater than 8 percent, spread mulch uniformly over the area to cover at least 75 percent of the ground surface at a rate of 2 tons/acre of straw or hay or its equivalent, unless the local soil conservation authority makes other recommendations in writing. If wood chips are used as mulch, do not use more than 1 ton/acre and add the equivalent of 11 lbs/acre available nitrogen (at least 50 percent of which is slow release).

e. If a mulch blower is used, the strands of the mulching material shall be at least 8 inches long to allow anchoring.

f. Ensure that mulch is anchored to minimize loss by wind and water.

g. When anchoring by mechanical means, use a mulch anchoring tool to properly crimp the mulch to a depth of 2 to 3 inches.

h. When anchoring with liquid mulch binders, use rates recommended by the manufacturer. Do not use liquid mulch binders within 100 feet of wetlands or waterbodies.

i. Install erosion control fabric, such as jute thatching or bonded fiber blankets, at a minimum, on waterbody banks at the time of final bank recontouring. Anchor the erosion control fabric with staples or other appropriate devices.

VI. RESTORATION

A. CLEANUP

1. Make every effort to complete final cleanup of an area (including final grading and installation of permanent erosion control structures) within 10 days after backfilling the trench in that area. If this schedule cannot be met, final cleanup must be completed as soon as possible. In no case shall final cleanup be delayed beyond the end of the next recommended seeding season.

2. A travel lane may be left open temporarily to allow access by construction traffic if the temporary erosion control structures are installed as specified in section V.F. and inspected and maintained as specified in sections III.B.11 through 13. When access is no longer required the travel lane must be removed and the right-of-way restored.

3. Excess rock, including blast rock may be used to backfill the trench to the top of the existing bedrock profile.

4. Remove excess rock from at least the top 12 inches of soil to the extent practicable in all rotated and permanent cropland, hayfields, pastures, residential areas, and other areas at the landowner's request. The size, density, and distribution of rock on the construction work area should be similar to adjacent areas not disturbed by construction. Make diligent efforts to remove stones greater than 4 inches if the off right-of-way areas do not contain stones greater than 4 inches. The landowner may approve other rock size provisions in writing.

5. Remove construction debris from the right-of-way and grade the right-of-way to leave the soil in the proper condition for planting.

B. PERMANENT EROSION CONTROL DEVICES

1. Trench Breakers

a. Trench breakers are intended to slow the flow of subsurface water along the trench. Trench breakers may be constructed of materials such as sand bags or polyurethane foam. Do not use topsoil in trench breakers.

b. An engineer or similarly qualified professional shall determine the need for and spacing of trench breakers. Otherwise, trench breakers shall be installed at the same spacing as and upslope of permanent slope breakers.

c. In agricultural fields and residential areas where slope breakers are not typically required, install trench breakers at the same spacing as if permanent slope breakers were required.

d. Install trench breakers at the base of slopes adjacent to waterbodies and wetlands and where needed to avoid draining of a wetland.

2. Permanent Slope Breakers

a. Permanent slope breakers are intended to reduce runoff velocity and divert water off the construction right-of-way. Permanent slope breakers may be constructed of materials such as soil and sand bags.

b. Construct and maintain permanent slope breakers in all areas, except cultivated areas and lawns, using the spacing recommendations obtained from the local soil conservation authority. In the absence of written recommendations, use the spacing for temporary slope breakers provided in section V.F.1.b.

c. Construct slope breakers with a 2 to 8 percent outslope to divert surface flow to a stable area. In the absence of a stable area, construct appropriate energy-dissipating devices off the construction right-of-way. Where slope breakers extend beyond the edge of the construction right-of-way to direct runoff into stabilized areas, they are subject to compliance with all applicable survey requirements.

C. SOIL COMPACTION MITIGATION

1. Test topsoil and subsoil for compaction at regular intervals in agricultural and residential areas disturbed by construction activities. Conduct tests on the same soil type under similar moisture conditions in undisturbed areas to identify approximate preconstruction conditions. Use U.S. Army Corps of Engineers-style cone penetrometers or other appropriate devices to conduct tests.

2. Plow severely compacted agricultural areas with a paraplow or other deep tillage implement. In areas where topsoil has been segregated, plow the subsoil before replacing the segregated topsoil. Alternatively, make arrangements with the landowner to plant and plow under a "green manure" crop, such as alfalfa, to decrease soil bulk density and improve soil structure. If subsequent construction and cleanup activities result in further compaction, conduct additional tilling.

3. Perform appropriate soil compaction mitigation in severely compacted residential areas.

D. REVEGETATION

1. General

a. The project sponsor is responsible for ensuring successful revegetation of soils disturbed by project-related activities, except as noted in section VI.D.1.b.

b. Restore all turf, ornamental shrubs, and specialized landscaping in accordance with the landowner's request, or compensate the landowner. Restoration work must be performed by personnel familiar with local horticultural and turf establishment practices.

2. Soil Additives

Fertilize and add soil pH modifiers in accordance with written recommendations obtained from the local soil conservation authority or land management agencies. Incorporate recommended soil pH modifier and fertilizer into the top 2 inches of soil as soon as possible after application.

3. Seeding Requirements

a. Prepare a seedbed in disturbed areas to a depth of 3 to 4 inches using appropriate equipment to provide a firm seedbed. When hydroseeding, scarify the seedbed to facilitate lodging and germination of seed.

b. Seed disturbed areas in accordance with written recommendations for seed mixes, rates, and dates obtained from the local soil conservation authority or land management agencies, except in upland areas where landowners request alternative seed mixes. Seeding and mulching in cultivated cropland shall conform with the adjacent off right-of-way area unless otherwise requested by the landowner in writing.

c. Perform seeding of permanent vegetation within the recommended seeding dates. If seeding cannot be done within those dates, use appropriate temporary erosion control measures discussed in section V.F. and perform seeding of permanent vegetation at the beginning of the next recommended seeding season. Lawns may be seeded on a schedule established with the landowner.

d. Seed slopes steeper than 33 percent immediately after final grading, weather permitting, subject to the specifications in section VI.D.3.a-c.

e. Seed all disturbed soils within 6 working days of final grading, weather and soil conditions permitting, subject to the specifications in section VI.D.3.a-c.

f. Base seeding rates on Pure Live Seed. Use seed within 12 months of seed testing.

g. Treat legume seed with an inoculant specific to the species. For conventional seeding, use 4 times the manufacturer's recommended rate of inoculant. For hydroseeding, use 10 times the recommended rate of inoculant.

h. Uniformly apply and cover seed in accordance with the written recommendations of the local soil conservation authorities or land management agencies.

i. In the absence of recommendations referred to in section VI.D.3.h. above, a seed drill equipped with a cultipacker is preferred for application, but broadcast or hydroseeding can be used at double the recommended seeding rates. Where seed is broadcast, firm the seedbed with a cultipacker or roller after seeding.

VII. OFF-ROAD VEHICLE CONTROL

To each owner or manager of forested lands offer to install and maintain measures to control unauthorized vehicle access to the right-of-way. These measures may include:

- signs;
- fences with locking gates;
- slash and timber barriers, pipe barriers, or a line of boulders across the right-of-way; and
- conifers or other appropriate trees or shrubs across the right-of-way.

VIII. POST-CONSTRUCTION ACTIVITIES

A. MONITORING AND MAINTENANCE

1. Conduct follow-up inspections of all disturbed areas after the first and second growing seasons to determine the success of revegetation.

2. Monitor crops for at least 2 years to determine the need for additional restoration.

3. Revegetation shall be considered successful if upon visual survey the density and cover of non-nuisance vegetation (or crops in cultivated cropland) are similar in density and cover to adjacent undisturbed lands. If vegetative cover and density are not similar or there are excessive noxious weeds after two full growing seasons, a professional agronomist shall determine the need for additional restoration measures (such as fertilizing or reseeding). Implement the measures recommended by the agronomist.

4. Monitor and correct problems with drainage and irrigation systems resulting from pipeline construction in active agricultural areas.

5. Routine vegetation maintenance clearing shall not be done more frequently than every 3 years. However, to facilitate periodic corrosion and leak surveys, a corridor not exceeding 10 feet in width centered on the pipeline may be maintained annually in a herbaceous state. In no case shall routine vegetation maintenance clearing occur between April 15 and August 1 of any year.

6. Restoration shall be considered successful if the right-of-way surface condition is similar to adjacent undisturbed lands, revegetation is successful, and all temporary erosion control devices are removed.

7. Efforts to control unauthorized off-road vehicle use, in cooperation with the landowner, shall continue throughout the life of the project. Maintain signs, gates, and vehicle trails as necessary.

B. REPORTING

1. The project sponsor shall maintain records that identify by milepost:

   a. method of application, application rate, and type of fertilizer, pH modifying agent, seed, and mulch used;

   b. acreage treated:

   c. dates of backfilling and seeding; and

   d. names of landowners requesting special seeding treatment and a description of the follow-up actions.

2. The project sponsor shall file with the Secretary quarterly activity reports documenting problems, including those identified by the landowner, and corrective actions taken for at least 2 years following construction.

APPENDIX C

WETLAND AND WATERBODY CONSTRUCTION AND MITIGATION PROCEDURES

WETLAND AND WATERBODY CONSTRUCTION AND MITIGATION PROCEDURES

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WETLAND AND WATERBODY CONSTRUCTION AND MITIGATION PROCEDURES (PROCEDURES)

I. APPLICABILITY

A. These Procedures apply to all natural gas construction projects where they are imposed by the Commission or agreed to by project sponsors and shall be used for all wetlands and waterbodies affected by a project. Deviations that involve measures different from those contained in these Procedures will only be permitted as certificated by the Commission or by written approval of the Director of the Office of Pipeline Regulation (OPR), or his/her designee, unless specifically required in writing by another Federal, state, or Native American land management agency for the portion of the project on its land. The project sponsor shall file other agency requirements with the Secretary of the Commission (Secretary) before construction.

B. The intent of these Procedures is to minimize the extent and duration of project-related disturbance of wetlands and waterbodies. Any project-related ground disturbance (including erosion) inside or outside of the certificated areas is subject to compliance with all applicable survey and mitigation requirements.

C. DEFINITIONS

1. "waterbody" includes any natural or artificial stream, river, or drainage with perceptible flow at the time of crossing, and other permanent waterbodies such as ponds and lakes:

   a. "minor waterbody" includes all waterbodies less than or equal to 10 feet wide at the water's edge at the time of construction;

   b. "intermediate waterbody" includes all waterbodies greater than 10 feet wide but less than or equal to 100 feet wide at the water's edge at the time of construction;

   c. "major waterbody" includes all waterbodies greater than 100 feet wide at the water's edge at the time of construction.

2. "wetland" includes any area that satisfies the requirements of the current Federal methodology for identifying and delineating wetlands.

II. PRECONSTRUCTION FILING

A. Project sponsors shall file with the Secretary before construction the hydrostatic testing information specified in section VII.B.3. and a wetland delineation report as described in section VI.B.1., if applicable.

B. Project sponsors shall file with the Secretary site-specific construction plans prepared to comply with sections V.B.2.c., V.B.6.c., V.B.9.b., VI.B.4., and VI.C.1.b. for review and written approval by the Director of OPR before construction.

C. Before construction begins on a project that will disturb more than 5 acres of land, the project sponsor shall file with the Secretary a copy of its Stormwater Pollution Prevention Plan prepared for compliance with the U.S. Environmental Protection Agency's (EPA) National Stormwater Program General Permit requirements. This plan must be available in the field on each construction spread and shall include a Spill Prevention, Containment, and Countermeasure Plan (see section IV.A.).

D. The project sponsor shall prepare a schedule identifying when trenching or blasting would occur within each waterbody greater than 10 feet wide, or within any coldwater fishery. The project sponsor shall file the schedule with the Secretary within 30 days of the acceptance of the certificate and revise it as necessary to provide at least 14 days advance notice. Changes within this last 14-day period must provide for at least 48 hours advance notice.

III. ENVIRONMENTAL INSPECTORS

A. At least one Environmental Inspector having knowledge of the wetland and waterbody conditions in the project area is required for each construction spread.

B. The Environmental Inspector's responsibilities are outlined in the Upland Erosion Control, Revegetation, and Maintenance Plan **(Plan)**.

IV. PRECONSTRUCTION PLANNING

A. SPILL PREVENTION, CONTAINMENT, AND COUNTERMEASURE (SPCC) PLAN

Prepare a SPCC Plan that, at a minimum:

1. Identifies typical fuel, lubricants, and hazardous materials stored or used in the project area, and the location, quantity, and method of storage;

2. Describes the preventive and mitigative measures to avoid or minimize impacts of spills of fuel, lubricants, or hazardous materials, especially within any municipal watershed area or within 100 feet of any waterbody or wetland;

3. Requires fueling and lubricating to be done in areas designated for such purposes and specifies measures to avoid or minimize spills when construction equipment (such as pontoon-mounted backhoes and pumps) will be refueled in or within 100 feet of any waterbody or wetland;

4. Identifies emergency notification procedures in the event of a spill;

5. Requires each construction crew to have sufficient supplies of absorbent and barrier materials on-hand to allow the rapid containment and recovery of any spills;

6. Includes procedures for collection and disposal of waste generated during spill cleanup or equipment maintenance;

7. Includes procedures regarding excavation and disposal of any soil or materials contaminated by a spill; and

8. Identifies names and telephone numbers of all state agencies and individuals that will be contacted in the event of a spill.

B. AGENCY COORDINATION

Coordinate with the appropriate agencies as specified in sections V.A., VI.A., VI.D.4., VI.D.5.c., VI.D.7., and VII.A.

V. WATERBODY CROSSINGS

A. NOTIFICATION PROCEDURES AND PERMITS

1. Provide written notification to the U.S. Army Corps of Engineers (COE) of the proposed construction activities.

2. Provide written notification to authorities responsible for potable surface water supply intakes located within 3 miles downstream of the crossing at least 1 week before beginning work in the waterbody.

3. Apply for state-issued waterbody crossing permits and obtain individual or generic section 401 water quality certification or waiver.

4. Notify state authorities that request such notification at least 48 hours before beginning trenching or blasting within the waterbody.

B. INSTALLATION

1. Time Window for Construction

Unless expressly permitted or further restricted by the appropriate state agency in writing on a site-specific basis, crossings must be constructed during the following time windows:

a. Coldwater Fisheries - June 1 through September 30; and

b. Coolwater and Warmwater Fisheries - June 1 through November 30.

2. Extra Work Areas

a. Access roads across a waterbody must use an equipment bridge as specified in section V.B.5.

b. Locate all extra work areas (such as staging areas and additional spoil storage areas) at least 50 feet away from waterbody boundaries, where topographic conditions permit. If topographic conditions do not permit a 50-foot setback, these areas must be located at least 10 feet from the water's edge.

c. The project sponsor shall file with the Secretary for review and written approval by the Director of OPR before construction site-specific construction plans for those extra work areas with a less than 50-foot setback from waterbody boundaries and a site-specific explanation of the conditions that will not permit a 50-foot setback.

d. Limit clearing of vegetation between extra work areas and the edge of the waterbody to the certificated construction right-of-way.

e. Limit the size of extra work areas to the minimum needed to construct the waterbody crossing.

3. General Crossing Procedures

a. Comply with section 404 nationwide permit program terms and conditions (33 CFR Part 330).

b. Construct crossings as close to perpendicular to the axis of the waterbody channel as engineering and routing conditions permit.

c. If the pipeline parallels a waterbody, attempt to maintain at least 15 feet of undisturbed vegetation between the waterbody and the right-of-way except at the crossing location.

d. Where waterbodies meander or have multiple channels, route the pipeline to minimize the number of waterbody crossings.

e. Maintain adequate flow rates to protect aquatic life, and prevent the interruption of existing downstream uses.

f. Do not store hazardous materials, chemicals, fuels, lubricating oils, or perform concrete coating activities within 100 feet of any waterbody or within any designated municipal watershed area (except at locations designated for these purposes by an appropriate governmental authority).

g. Attempt to refuel all construction equipment at least 100 feet from any waterbody. If construction equipment must be refueled within 100 feet of a waterbody, follow the procedures outlined in the project-specific SPCC Plan. See section IV.A.

4. Spoil Pile Placement and Control

a. All spoil from minor and intermediate waterbody crossings, and upland spoil from major waterbody crossings, must be placed in the construction right-of-way at least 10 feet from the water's edge or in additional extra work areas as described in section V.B.2.b.

b. Use sediment barriers to prevent the flow of spoil into any waterbody.

5. Equipment Bridges

a. Only clearing equipment may cross waterbodies before installation of equipment bridges. Limit the number of such crossings of each waterbody to one per piece of equipment.

b. Construct equipment bridges using one of the following methods:

(1) equipment pads and culvert(s);
(2) clean rockfill and culvert(s); or
(3) flexi-float or portable bridges.

Do not use soil to construct or stabilize equipment bridges.

c. Design and maintain each equipment bridge to withstand and pass the highest flow that would occur while the bridge is in place.

d. Maintain equipment bridges to prevent soil from entering the waterbody.

e. Remove equipment bridges as soon as possible after permanent seeding unless the COE authorizes it as a permanent bridge.

f. If there will be more than 1 month between final cleanup and the beginning of permanent seeding and reasonable alternative access to the right-of-way is available, remove equipment bridges as soon as possible after final cleanup.

6. Dam and Pump

a. The dam-and-pump method may be used without prior approval for crossings of minor waterbodies where fluming is not required by these Procedures.

b. Prior written approval from the Director of OPR is required to dam and pump where:

(1) fluming is required by these Procedures; or
(2) the waterbody is greater than 10 feet wide.

c. To request approval to use the dam-and-pump method, the project sponsor shall file with the Secretary a project-specific plan for review and written approval by the Director of OPR before construction. This plan must list all waterbodies where the dam-and-pump method would be used and describe all measures that would be used to maintain downstream flows, including:

(1) number and capacity of active pumps;
(2) number and capacity of backup pumps;
(3) the types of dams to be used up- and downstream of the crossing;
(4) how streambed scour would be prevented at the pump discharge; and
(5) how the operation would be monitored if the crossing is prolonged beyond one normal construction day.

7. Crossings of Minor Waterbodies

a. For crossings of all state-designated fisheries, all construction equipment must cross the waterbody on an equipment bridge as specified in section V.B.5.

b. Equipment bridges are not required at minor waterbodies that do not have a state-designated fishery classification (for example, agricultural or intermittent drainage ditches). However, if an equipment bridge is used it must be constructed as described in section V.B.5.

c. For crossings of all coldwater fisheries, and all coolwater and warmwater fisheries considered significant by the state, route waterbody flow across the trench using a flume pipe, and install the pipeline using all of the following "dry-ditch" techniques:

(1) install flume pipe after blasting, but before trenching;
(2) use sand bag or sand bag and plastic sheeting diversion structure, or equivalent;
(3) properly align flume pipe;
(4) do not remove flume pipe during trenching, pipelaying, or backfilling activities; and
(5) remove all flume pipes and dams that are not also part of the equipment bridge after final cleanup but before permanent seeding.

d. For minor waterbody crossings not covered by section V.7.c., complete construction in the waterbody (not including blasting) within 24 hours. Limit use of equipment operating in the waterbody to that needed to construct the crossing.

8. Crossings of Intermediate Waterbodies

a. Limit use of equipment operating in the waterbody to that needed to construct the crossing.

b. All other construction equipment must cross on an equipment bridge as specified in section V.B.5.

c. Attempt to complete trenching and backfill work within the waterbody (not including blasting) within 48 hours, unless site-specific conditions make completion within 48 hours infeasible.

9. Crossings of Major Waterbodies

a. All major waterbody crossings must be constructed in accordance with the measures contained in these Procedures to the maximum extent practicable.

b. The project sponsor shall develop and file with the Secretary detailed, site-specific construction procedures (including scaled drawings identifying all areas to be disturbed by construction) for each major waterbody crossing, as defined in section I.C.1.c. for review and written approval by the Director of OPR before construction. This requirement does not apply to offshore pipeline construction.

10. Temporary Erosion and Sediment Control

Install sediment barriers (as defined in section V.F.2.a. of the Plan) immediately after initial disturbance of the waterbody or adjacent upland. Sediment barriers must be properly maintained throughout construction and reinstalled as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. Temporary erosion and sediment control measures are addressed in more detail in the Plan.

a. Install sediment barriers across the entire construction right-of-way at all waterbody crossings.

b. Where waterbodies are adjacent to the construction right-of-way, install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil and sediment within the right-of-way.

c. Use trench plugs at all non-flumed waterbody crossings to prevent diversion of water into upland portions of the pipeline trench and to keep any accumulated trench water out of the waterbody. Trench plugs must be of sufficient size to withstand upslope water pressure.

11. Trench Dewatering

Dewater trench in such a manner that no heavily silt-laden water flows into any waterbody.

C. RESTORATION

1. Use clean gravel or native cobbles for the upper 1 foot of trench backfill in all waterbodies that contain coldwater fisheries.

2. Stabilize waterbody banks and install temporary sediment barriers within 24 hours of completing the crossing. For dry ditch crossings, complete bank stabilization before returning flow to the waterbody channel.

3. Return all waterbody banks to preconstruction contours.

4. Application of riprap must comply with section 404 nationwide permit program terms and conditions (33 CFR Part 330).

5. Unless otherwise specified by state permit, limit the use of riprap to areas where flow conditions preclude effective vegetative stabilization techniques such as seeded erosion control fabric.

6. Revegetate disturbed riparian areas with conservation grasses and legumes or native plant species, preferably woody species.

7. Remove all temporary sediment barriers when restoration of adjacent upland areas is successful as specified in section VIII.A.6. of the Plan.

8. For each waterbody crossed, install a permanent slope breaker and a trench breaker at the base of slopes near the waterbody. Locate the trench breaker immediately upslope of the slope breaker.

9. Sections V.C.2. through V.C.7. above also apply to any streams mapped (as perennial or intermittent) on U.S. Geological Survey 7.5-minute topographic quadrangles but not flowing at the time of construction.

D. POST-CONSTRUCTION MAINTENANCE

1. Limit vegetation maintenance adjacent to waterbodies to allow a riparian strip at least 25 feet wide, as measured from the waterbody's mean high water mark, to permanently revegetate with native plant species across the entire right-of-way. However, to facilitate periodic pipeline corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be maintained in a herbaceous state. In addition, trees that are located within 15 feet of the pipeline that are greater than 15 feet in height may be cut and removed from the right-of-way.

2. Do not use herbicides or pesticides in or within 100 feet of a waterbody except as specified by the appropriate land management or state agency.

VI. WETLAND CROSSINGS

A. NOTIFICATION PROCEDURES AND PERMITS

1. Provide written notification to the COE concerning the proposed construction activities.

2. Apply for state-issued wetland crossing permit(s) and obtain individual or generic section 401 water quality certification or waiver.

B. GENERAL

1. The project sponsor shall conduct a wetland delineation using the current Federal methodology and file a wetland delineation report with the Secretary before construction. This report shall identify:

   a. by milepost all federally delineated wetlands that would be affected;

   b. the National Wetlands Inventory (NWI) classification for each wetland;

   c. the crossing length of each wetland in feet; and

   d. the area of permanent and temporary disturbance that would occur in each NWI classification type.

2. Route the pipeline to avoid wetland areas to the maximum extent possible. If a wetland cannot be avoided or crossed by following an existing right-of-way, route the new pipeline in a manner that minimizes disturbance to wetlands. Where looping an existing pipeline, overlap the existing pipeline right-of-way with the new construction right-of-way. In addition, locate the loop line no more than 25 feet away from the existing pipeline unless site-specific constraints would adversely affect the stability of the existing pipeline.

3. Limit the width of the construction right-of-way to 75 feet or less.

4. Implement the provisions of sections V. and VI. in the event a waterbody crossing is located within or adjacent to a wetland crossing. If all provisions of sections V. and VI. cannot be met, the project sponsor must file with the Secretary a site-specific crossing plan for review and written approval by the Director of OPR before construction. This crossing plan shall address at a minimum:

   a. spoil control;

b. equipment bridges;

c. restoration of waterbody banks and wetland hydrology;

d. timing of the waterbody crossing;

e. method of crossing; and

f. size and location of all extra work areas.

5. Do not locate aboveground facilities in any wetland, except where the location of such facilities outside of wetlands would prohibit compliance with U.S. Department of Transportation regulations.

C. INSTALLATION

1. Extra Work Areas and Access Roads

a. Locate all extra work areas (such as staging areas and additional spoil storage areas) at least 50 feet away from wetland boundaries, where topographic conditions permit. If topographic conditions do not permit a 50-foot setback, these areas must be located at least 10 feet from the wetland's edge.

b. The project sponsor shall file with the Secretary for review and written approval by the Director of OPR before construction site-specific construction plans for those extra work areas with a less than 50-foot setback from wetland boundaries and a site-specific explanation of the conditions that will not permit a 50-foot setback.

c. Limit clearing of vegetation between extra work areas and the edge of the wetland to the certificated construction right-of-way.

d. Limit the size of extra work areas to the minimum needed to construct the wetland crossing.

e. The only access roads, other than the construction right-of-way, that can be used in wetlands are those existing roads that can be used with no modification and no impact on the wetland.

2. Crossing Procedures

a. Comply with section 404 nationwide permit program terms and conditions (33 CFR Part 330).

b. Assemble the pipeline in an upland area and use "push-pull" or "float" techniques to place pipe in trench where water and other site conditions allow.

c. Minimize the duration of construction-related disturbance within wetlands.

d. Limit construction equipment operating in wetland areas to that needed to clear the right-of-way, dig the trench, fabricate and install the pipeline, backfill the trench, and restore the right-of-way. All other construction equipment shall use access roads located in upland areas to the maximum extent practicable. Where access roads in upland areas do not provide reasonable access, limit all other construction equipment to one pass through the wetland using the right-of-way.

e. Cut vegetation off at ground level, leaving existing root systems in place, and remove it from the wetland for disposal.

f. Limit pulling of tree stumps and grading activities to directly over the trenchline. Do not grade or remove stumps or root systems from the rest of the right-of-way in wetlands unless the Chief Inspector and Environmental Inspector determine that safety-related construction constraints require removal of tree stumps from under the working side of the right-of-way.

g. Segregate the top 1 foot of topsoil from the area disturbed by trenching, except in areas where standing water or saturated soils are present. After backfilling is complete, restore the segregated topsoil to its original location.

h. Do not store hazardous materials, chemicals, fuels, lubricating oils, or perform concrete coating activities in a wetland, or within 100 feet of any wetland boundary.

i. Attempt to refuel all construction equipment in an upland area at least 100 feet from a wetland boundary. If construction equipment must be refueled in a wetland or within 100 feet of any wetland boundary, follow the procedures outlined in the project-specific SPCC Plan. See section IV.A.

j. Do not use rock (except as allowed by item k. below), soil imported from outside the wetland, tree stumps, or brush riprap to stabilize the right-of-way.

k. If standing water or saturated soils are present, use low-ground-weight construction equipment, or operate normal equipment on timber riprap, prefabricated equipment mats, or geotextile fabric overlain with gravel. Geotextile fabric used for this purpose must be strong enough to allow removal of all gravel and fabric from the wetland.

l. Do not cut trees outside of the construction right-of-way to obtain timber for riprap or equipment mats.

m. Attempt to use no more than two layers of timber riprap to stabilize the right-of-way.

n. Remove all timber riprap, prefabricated equipment mats, geotextile fabric, and overlying gravel upon completion of construction.

3. Temporary Sediment Control

Install sediment barriers (as defined in section V.F.2.a. of the Plan) immediately after initial disturbance of the wetland or adjacent upland. Sediment barriers must be properly maintained throughout construction and reinstalled as necessary (such as after backfilling of the trench). Except as noted below in section VI.3.c., maintain sediment barriers until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. Temporary erosion and sediment control measures are addressed in more detail in the Plan.

a. Install sediment barriers across the entire construction right-of-way immediately upslope of the wetland boundary at all wetland crossings, as necessary to prevent sediment flow into the wetland.

b. Where wetlands are adjacent to the construction right-of-way, install sediment barriers along the edge of the construction right-of-way as necessary to prevent sediment flow into the wetland.

c. Install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil and sediment within the right-of-way. Remove these sediment barriers during right-of-way cleanup.

4. Trench Dewatering

Dewater trench in such a manner that no heavily silt-laden water flows into any wetland or waterbody.

D. RESTORATION

1. Where the pipeline trench may drain a wetland, construct trench breakers and/or seal the trench bottom as necessary to maintain the original wetland hydrology.

2. For each wetland crossed, install a permanent slope breaker and a trench breaker at the base of slopes near the boundary between the wetland and adjacent upland areas. Locate the trench breaker immediately upslope of the slope breaker.

3. Do not use fertilizer, lime, or mulch unless required in writing by the appropriate land management or state agency.

4. Consult with the appropriate land management or state agency and develop plans for active revegetation of wetlands affected by construction. The revegetation plans should include specifications for the planting of native wetland species. Provide these plans to the FERC staff upon request. In the absence of detailed revegetation plans or until the appropriate seeding season for permanent wetland vegetation, temporarily revegetate the right-of-way with annual ryegrass at a rate of 40 pounds/acre, unless standing water is present.

5. For all forested wetlands affected:

   a. plant native trees to ultimately restore the temporary right-of-way and the non-maintained portion of the permanent right-of-way to its preconstruction state;

   b. plant native shrub and herbaceous species to revegetate the 30-foot-wide portion of the permanent right-of-way selectively maintained as described in section VI.E.1.; and

   c. consult with the U.S. Fish and Wildlife Service, the EPA, the COE, and the appropriate state agency to determine the density for planting the native trees and shrubs.

6. Ensure that all disturbed areas permanently revegetate with native wetland herbaceous and/or woody plant species.

7. Develop specific procedures in coordination with the appropriate land management or state agency, where necessary, to prevent the invasion or spread of undesirable exotic vegetation (such as purple loosestrife and phragmites).

8. Remove temporary sediment barriers located at the boundary between wetland and adjacent upland areas after upland revegetation and stabilization of adjacent upland areas are judged to be successful as specified in section VIII.A.6. of the Plan.

E. POST-CONSTRUCTION MAINTENANCE

1. Do not conduct vegetation maintenance over the full width of the permanent right-of-way in wetlands. However, to facilitate periodic pipeline corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be maintained in a herbaceous state. In addition, trees within 15 feet of the pipeline that are greater than 15 feet in height may be selectively cut and removed from the right-of-way.

2. Do not use herbicides or pesticides in or within 100 feet of a wetland, except as specified by the appropriate land management agency or state agency.

3. Monitor the success of wetland revegetation annually for the first 3 to 5 years after construction. Revegetation should be considered successful if the cover of native herbaceous and/or woody species is at least 80 percent of the total area, and the diversity of native species is at least 50 percent of the diversity originally found in the wetland. If revegetation is not successful at the end of 3 years, develop and implement (in consultation with a professional wetland ecologist) a remedial revegetation plan to actively revegetate the wetland with native wetland herbaceous and woody plant species. Continue revegetation efforts until wetland revegetation is successful.

VII. HYDROSTATIC TESTING

A. NOTIFICATION PROCEDURES AND PERMITS

1. Apply for state-issued withdrawal permits, as required.

2. Apply for National Pollutant Discharge Elimination System (NPDES) or state-issued discharge permits, as required.

3. Notify appropriate state agencies of intent to use specific sources at least 48 hours before testing activities unless they waive this requirement in writing.

B. GENERAL

1. Perform 100 percent radiographic inspection of all pipeline section welds or hydrotest the pipeline sections, before installation under waterbodies or wetlands.

2. If pumps used for hydrostatic testing are within 100 feet of any waterbody or wetlands, address the operation and refueling of these pumps in the SPCC Plan prepared as described in section IV.A.

3. The project sponsor shall file with the Secretary before construction a list identifying the location of all waterbodies proposed for use as a hydrostatic test water source or discharge location.

C. INTAKE SOURCE AND RATE

1. Screen the intake hose to prevent entrainment of fish.

2. Do not use state-designated exceptional value waters, waterbodies which provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate Federal, state, and/or local permitting agencies grant written permission.

3. Maintain adequate flow rates to protect aquatic life, provide for all waterbody uses, and provide for downstream withdrawals of water by existing users.

4. Locate hydrostatic test manifolds outside wetlands and riparian areas to the maximum extent practicable.

D. DISCHARGE LOCATION, METHOD, AND RATE

1. Regulate discharge rate, use energy dissipation device(s), and install sediment barriers, as necessary, to prevent erosion, streambed scour, suspension of sediments, or excessive streamflow.

2. Do not discharge into state-designated exceptional value waters, waterbodies which provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate Federal, state, and local permitting agencies grant written permission.

3. Provide a copy of the results of sampling conducted in accordance with NPDES or state-issued discharge permit requirements to the Commission's environmental staff upon request.

APPENDIX D

WETLANDS CROSSED BY THE LOOPS

WETLANDS AFFECTED BY CONSTRUCTION AND OPERATION

Facility	Milepost	Type[1]	Length of Crossing	Area Affected (acres)	
				Construction[2]	Maintenance
West of St. John Loop	848.6	Emergent	100	0.20	0.08
	848.9	Farmed	100	0.20	0.08
	849.5	Emergent	160	0.31	0.13
	849.6	Emergent	40	0.08	0.03
	849.7	Open Water*	770	1.50	0.62
	850.0	Forested/Emergent	200	0.39 (0.27)	0.14
Subtotal			**1,370**	**2.68 (0.27)**	**1.08**
East of St. John Loop	874.8	Scrub/Shrub	175	0.34	0.14
	875.1	Forested/Emergent	10	0.02 (0.01)	0.01
	875.5	Forested/Emergent	600	1.17 (0.83)	0.41
	875.7	Forested/Emergent	250	0.49 (0.34)	0.17
	875.8	Emergent	700	1.37 (0.96)	0.48
	876.1	Forested/Emergent	50	0.10 (0.07)	0.03
	876.1	Emergent	75	0.15 (0.10)	0.09
	876.1	Forested/Emergent	170	0.33 (0.23)	0.12
	876.1	Forested/Emergent	570	1.11 (0.79)	0.39
	876.2	Forested/Emergent	1425	2.78 (1.96)	0.98
	876.3	Forested/Emergent	520	1.01 (0.72)	0.36
	876.4	Forested/Emergent	50	0.10 (0.07)	0.03
	876.6	Forested/Emergent	600	1.17 (0.83)	0.41
	877.3	Forested/Emergent	200	0.39 (0.28)	0.14
	877.3	Forested/Emergent	150	0.29 (0.20)	0.10
	878.3	Emergent	100	0.20	0.08
	878.6	Forested/Emergent	50	0.10 (0.07)	0.03
	878.7	Emergent	150	0.29	0.12

Facility	Milepost	Type[1]	Length of Crossing	Area Affected (acres)	
				Construction[2]	Maintenance
East of St. John Loop (continued)	879.7	Emergent	300	0.59	0.24
	879.8	Emergent	150	0.29	0.12
	881.3	Forested/Emergent	500	0.98 (0.69)	0.34
	881.8	Forested/Emergent	260	0.51 (0.35)	0.15
	882.9	Forested/Emergent	30	0.06 (0.04)	0.02
	883.3	Forested/Emergent	340	0.66 (0.47)	0.24
	883.5	Open Water**	50	0.10 (0.07)	0.04
	884.4	Forested/Emergent	75	0.15 (0.10)	0.05
	884.5	Emergent	300	0.59	0.24
	884.9	Emergent	280	0.55	0.23
Subtotal			**8,130**	**15.89 (9.18)**	**5.76**
Total			**9,500**	**18.57 (9.45)**	**6.84**

*770 feet of this category is also classified as a PSS1C wetland.
**50 feet of this category is also classified as a PFO1C wetland.
1 Forested wetlands only exist on the new right-of-way. The adjacent wetlands on the existing right-of-way are emergent.
2 The total includes the area of both forested and emergent wetlands. The forested portion is in parenthesis.

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